Green Everett Partnership

20-Year Forest Management Plan

March 2013

Acknowledgments

In 2004, the Green Seattle Partnership established a new method of evaluating and managing urban forests. This effort set the stage for engaging the public in ongoing stewardship of urban forests and natural areas and was expanded into the cities of Kirkland, Tacoma, Redmond, and Kent with the formation of the Green Kirkland Partnership, Green Tacoma Partnership, Green Redmond Partnership, and Green Kent Partnership. We developed the Green Everett Partnership based on these efforts, creating a plan to address the needs of the Everett community. This important work was funded, in part, by a generous grant from Boeing's Healthy Communities Initiative.

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Executive Summary

In 2012, the City of Everett and Forterra formed a partnership to evaluate the condition of Everett's forested parkland and develop a plan to help make Everett's vision of a sustainable, healthy forest a reality. Everett is the first city in Snohomish County to become a Green City Partner and joins Seattle, Tacoma, Kirkland, Kent, and Redmond. With this network of Green Cities comes great collaboration. The Green Everett Partnership will both benefit from and contribute to this robust network of resources and expertise.

The Green Everett Partnership is building a sustainable network of healthy urban forests for the benefit and enjoyment of current and future generations, with the goal of bringing 354 acres of Everett's forested parkland into active management during the next 20 years. Although this is an ambitious task, it is important for the health of forested parklands and the City of Everett, and it is only possible with the help of an engaged community and volunteer leaders.

Everett's forested parklands face the same kinds of pressures and problems as many urban forests, including fragmentation of greenspaces, an invasive-dominated understory that inhibits native species from regenerating, a declining tree canopy, and resource limitations on natural-area management and restoration. These pressures diminish the benefits provided by these valuable urban forests, such as reduced stormwater runoff, improved water and air quality, attractive communities and stronger property values, greenhouse gas reduction, habitat for native wildlife, and improved quality of life.

The Green Everett Partnership's vision is to have healthy forested parklands supported by an aware and engaged community in which individuals, neighborhoods, nonprofits, businesses, and city government are working together to protect and maintain their valuable public resources. The envisioned urban forestry-management program will be dedicated to restoring and maintaining forested parklands while fostering appreciation and understanding of the long-term benefits that urban forests provide to the City of Everett.

It is estimated that the total cost of fully implementing the Green Everett Partnership and completing all plan tasks through 2032 will be approximately $6.5 million (2012 dollars). This is a significant investment. The cost of effectively managing these lands without volunteer involvement and solely using skilled field crews is estimated to be more expensive — and does not guarantee long-term success or community ownership. However, working side by side with city staff, volunteers are forecasted to leverage up to an additional $4.9 million in value for the Partnership during the course of the program. Since the program started in April 2012, the Green Everett Partnership has been working with volunteers, organizations, and city staff interested in active natural-area management and stewardship in Everett. These groups will help carry this plan into the future. A successful Green Everett Partnership will be one that serves as a model for other cities and the future management of Everett's valuable natural areas — including any additional city-owned land that may be added to the program later.

Introduction

Everett's wealth of open spaces, parks, and greenbelts makes its neighborhoods active and vibrant, improves property values, and helps define the community. Much of this natural space is forested parkland. Everett's forested parklands provide numerous services that benefit all areas of the city: they clean the air, filter the water, hold stormwater, and prevent erosion. These natural public spaces enhance neighborhoods and also provide habitat for urban wildlife.

Historically, development was the largest threat to natural areas. Throughout the Puget Sound region, public agencies, land trusts, and nonprofits have worked to reduce this threat by purchasing and conserving open space. Many of these properties were forests set aside to allow nature to take its course with the goal of minimizing adverse impacts. People are quickly learning, however, that urban forests face unique pressures, and that passive management is often inadequate to maintain a high quality of environmental health. Invasive species, litter, pollution, changes in surrounding land use, and fragmentation reduce the forest's ability to thrive within cities. Urban forests areas are disappearing, and with them go critical services such as the reduction of stormwater runoff and absorption of greenhouse gases.

The dominance of nonnative plant species, such as Himalayan and evergreen blackberry, English ivy, Scotch broom, and bindweed, is reported to be a major cause of biodiversity loss and ecosystem degradation in urban forests (Pimentel et al. 2000; Soule 1991). These invasive weeds lack natural population control (e.g., predators, diseases) and are capable of rapid reproduction; they can quickly blanket the understory and prevent native plants from reseeding (Boersma et al. 2006). At the same time, invasive vines such as English ivy climb into treetops, where they can block light from reaching a tree's leaves, and the weight of their trunk-like vines can topple trees. Without native plants in the understory, habitat and food supply for native wildlife is greatly reduced, and the next generation of native tree canopy is lost. (See Table 2 for a list of common plants referenced in this plan.) This problem is exacerbated by the fact that a significant portion of forest canopy in the Puget Sound region is now composed of relatively short-lived, mature bigleaf maples and red alders coming to the end of their life spans. As these trees succumb to age, new seedlings are not present to replace them, resulting in a loss of forests over time.

Everett's urban forests can significantly benefit from intervention to help reverse this trend and prevent major loss of habitat and ecological services in Everett. The City of Everett

What Is Active Management?

Everett's forested parklands have a variety of needs specific to urban environments, including restoration, long-term maintenance, and monitoring. Meeting these needs might mean removing invasive species, planting natives, watering, mulching, or visiting the site to check for invasive regrowth or any new problems that arise. We refer to all of these activities as active management, acknowledging that caring for urban natural areas requires a dynamic, hands-on effort in the field to counteract the pressures of these areas' surroundings.

and Forterra partnered to develop a coordinated restoration and stewardship program called the *Green Everett Partnership*. The Partnership developed this 20-year plan to comprehensively assess the conditions of Everett's forested parkland (i.e., land under the current management of the city's Parks and Recreation Department). The plan also assesses agency coordination and capacity, promotes community participation, and establishes the long-term planning needed to support the vision and goals of the Partnership.

The Need for a Green Everett Partnership

With continued population growth anticipated throughout the Puget Sound region, Everett's residential and business density will be higher. One of the challenges facing the city is how to balance this growth while maintaining a strong economy and exceptional quality of life. For example, since increasing high-density housing, including condominiums and multifamily developments, often results in less personal access to open space and the natural environment, it is important to protect and enhance Everett's current abundance of parks and natural areas.

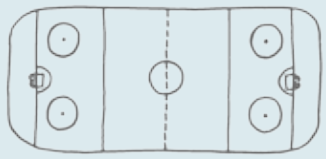
Additionally, urban developments such as condominiums, townhouses, and office parks are considered more desirable when they are conveniently located and accessible by bike or on foot, near parks and natural areas. Studies reveal that homes with views of urban forests can have up to 5% higher property values than homes that lack views of forest amenities (Tyrväinen and Miettiner 2000). This measurable value is due to the fact that greenspace is an important element of livable, attractive communities. Parks, trails, and natural areas give people who live in cities recreational opportunities and a connection to nature that can help sustain a vibrant urban life. Trees and greenspace are also associated with a variety of measurable public health benefits by providing people with access to nature and the amenities needed for exercise, both of which have links to stress reduction and physical wellness (See Table 1).

In 2005, Forterra launched the Cascade Agenda, a 100-year vision for conservation and economic growth in the Pacific Northwest, with a central focus on building livable urban communities. The City of Everett also recognizes the need to increase the level of care and attention given to its valuable natural areas. The Green Everett Partnership can play a key role in helping meet these shared goals. The Green Everett Partnership aims to bring 354 acres of Everett's forested parkland into active management during the next 20 years. Although this is an ambitious task, it is crucial for the health of the city's urban forests — and the city itself. This will only be possible with the help of an engaged and dedicated community that has an ownership stake in the Green Everett Partnership's success.

Similar Green City Partnerships have already seen success in Seattle, Tacoma, Kirkland, Redmond, and Kent. Together, these partnerships are establishing one of the largest urban forest restoration programs in the nation.

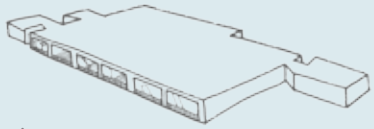
How Large Is 354 Acres?

The acres of Everett's forested parks make up roughly 2% of the city's total land area. At 354 acres, this is approximately 907 times the size of a regulation NHL hockey rink, 3.6 times the size of the Boeing's Everett Factory and 1.8 times the size of Jetty Island.



x 907

NHL hockey rink



x 3.6

Boeing Factory

x 1.8

Jetty Island

Benefits of a Green Everett Partnership

The benefits of caring for Everett's urban forests are clear. Research indicates that urban forests give people a higher quality of life (Dwyer et al. 1992), provide many ecosystem services, create opportunities to improve physical and mental health, and enjoy nature close at hand. They help keep the air and water cleaner, provide habitat for native wildlife, and make communities more livable and beautiful.

In 1998, American Forests, a nonprofit citizens' conservation organization, analyzed the Puget Sound region's urban forests. Its study revealed that trees in our region removed 38,990 tons of air pollution — a service that was then valued at $166.5 million. The study also showed that these trees created a 2.9 billion-cubic-foot reduction in runoff, a service valued at $5.9 billion (American Forests 1998). Were these forests to be lost, these dollar values become the costs associated with building new infrastructure to carry out equivalent functions.

A city with abundant and healthy vegetation enjoys significantly higher air quality. Conifers, specifically, can remove 50 pounds of particulate pollutants from the air per year (Dwyer et al. 1992), which is correlated in studies with a reduced incidence of asthma in children and other related respiratory health issues in people of all ages (Logvasi et al. 2008).

Urban forests also help combat climate change and the effects of air pollution. Trees, as they grow, capture carbon dioxide through the process of photosynthesis and help remove soot and other pollutants through their leaves and branches. They store the carbon from the absorbed carbon dioxide in the woody mass of their branches and trunks, and release oxygen into the air. It is estimated that Washington State's urban trees are responsible for the sequestration of more than 500,000 tons of carbon per year (Nowak and Crane 2001). Each acre of healthy, mature Western Washington forest could be responsible for the storage of more than 300 tons of carbon, which translates to the removal of more than 1,100 tons of carbon dioxide from the atmosphere (Smithwick et al. 2002). For example, the average passenger vehicle emits 5.1 tons of carbon dioxide per year (EPA 2011). This means each acre of healthy forest removes carbon dioxide emissions for approximately 215 vehicles.

While invasive plants such as ivy and blackberry also carry out photosynthesis to sequester carbon and create oxygen, they are shorter lived and contain less biomass than mature conifers. This makes them less effective at removing carbon dioxide from the atmosphere and storing it. Additionally, they often do not supply adequate habitat for local native wildlife and are much less effective at providing other ecosystem services than healthy native Northwest forest communities. For example, while some birds will nest in blackberry bushes, it takes a variety of native plants to provide nesting opportunities for all our local bird species (Marzluff 2000). The monocultures that invasive plants typically create do not foster the diverse assemblage of interrelating native species that keep natural areas healthy and stable.

Research is still needed to quantify the economic and ecosystem services provided by urban forests specific to the City of Everett. However, drawing from the wide body of knowledge and related studies outlined here, we surmise that the cost of doing nothing could be high and have negative effects on the city's environmental, economic, and public health.

Photo credit: Juliet Violette

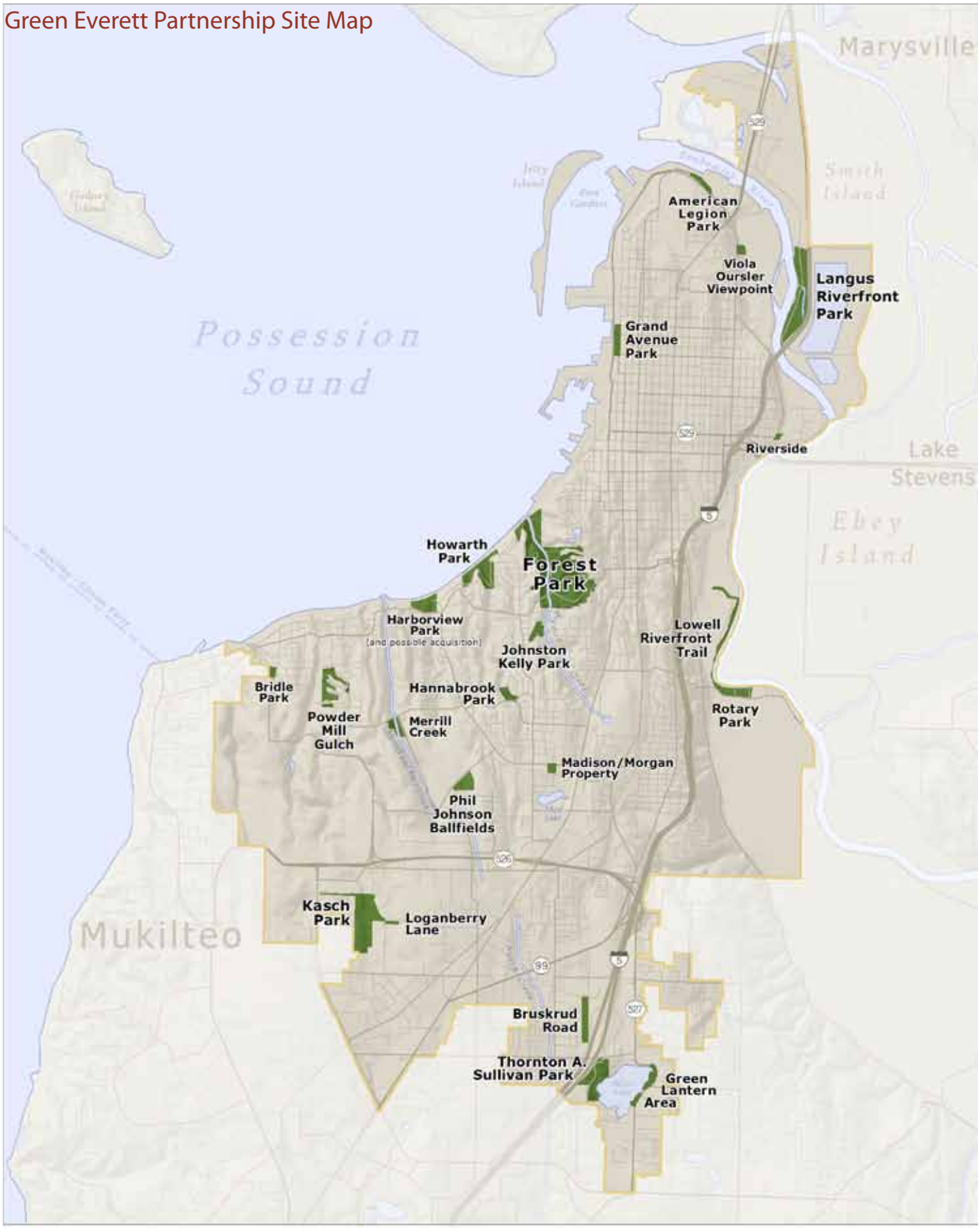
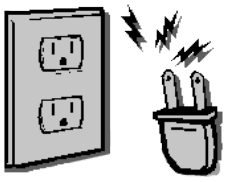


Figure 1. Green Everett Partnership site map

Table 1. Ecological and public health benefits of urban forests and natural areas

	Reduce Stormwater Runoff	Tree canopies reduce the rate at which rain falls to the earth. Water enters the ground more slowly under trees and is better absorbed and filtered into groundwater than when it runs off paved and nonporous surfaces. Since conifers and other evergreen plants grow year-round, more water moves up from the ground, through plant tissues, and into the atmosphere as water vapor. Urban forests can reduce annual stormwater runoff by 2%-7%, and a mature tree can store 50-100 gallons of water during large storms (Fazio 2012). Green streets, rain barrels, and tree planting are estimated to be 3-6 times more effective in managing stormwater per $1,000 invested than conventional methods (Foster et al. 2011).
	Improve Water Quality	Plant roots absorb water, much of which is full of pollutants in an urban environment. Some pollutants are filtered and transformed by bacteria and other microorganisms in the soil (Prince George's County 2007); others are transformed by plants through metabolism or trapped in woody tissues and released when a tree decomposes. Forested buffers around streams have been shown to reduce sediment and nutrient pollution levels (Osborne and Kovacic 1993).
	Reduce Erosion	As the tree canopy slows the speed of rain falling on the earth, rainwater has less energy to displace soil particles. Soils under a canopy and the thick layer of leaf litter are protected from the erosive energy of rainwater (Xiao et al. 1998).
	Improve Air Quality	Plant leaves absorb carbon dioxide and produce oxygen through photosynthesis. The surfaces of leaves trap airborne dust and soot (McPherson et al. 1994), removing millions of pounds of air pollutants annually from the air in a city (American Forests 2001).
	Provide Wildlife Habitat	Native wildlife has unique requirements for food and shelter. Although raccoons and crows adapt well to urban environments, many native species do not. They require a variety of plants and multiple layers of canopy to forage and nest. Healthy urban forests under restoration have been demonstrated to increase species diversity (Ruiz-Jaén and Aide 2006).
	Reduce Energy Use and Combat Climate Change	A 25-foot tree reduces annual heating and cooling costs of a typical residence by an average of 8%-12% (University of Washington 1998). Trees absorb carbon dioxide and store the carbon in woody tissues, reducing the amount of carbon dioxide in the atmosphere. Urban forests have the capacity to lower energy consumption in urban environments by lowering ambient temperatures and to create microclimates conducive to air movement. Lowering energy consumption reduces electricity use and the amount of carbon dioxide emitted into the atmosphere from power plants (Nowak and Crane 2001). Each year, an acre of trees absorbs the amount of carbon produced by driving a car for 26,000 miles (Nowak et al. 2002).
	Boost Local and Regional Economy	Urban forestry supports job creation and retention, resulting in added individual income and increased local, state, and federal taxes (CalFire 2011). Homes that border urban forests may be valued at up to 5% more than comparable homes farther from parks (Tyrväinen and Miettiner 2000), and street trees add value to homes as well (Donovan and Butry 2010). Forested parklands provide residential properties with an adjacent natural area for walking and passive recreation activities such as bird-watching.

Ecological and public health benefits of urban forests and natural areas continued

	Buffer Noise	Tree canopies dampen sound by intercepting sound waves (Herrington 1974). Noise buffers composed of trees and shrubs can reduce 50% of noise detectable by the human ear (USDA 1998), including high-frequency noise, which is most distressing to people (McPherson et al. 2001).
	Community Building	Physical features, particularly nature, play an important role in creating vital neighborhood spaces (Sullivan et al. 2004). Urban greenspaces and parks provide a gathering place for people of different backgrounds to connect with each other. Strong community relationships are built from exchanging information and working together to achieve common goals (e.g., open-space improvements). Residents who are more attached to their community have higher levels of social cohesion and social control, less fear of crime, and display more signs of physical revitalization of the neighborhood (Brown et al. 2003).
	Make Communities More Attractive	Vegetation provides visual relief from the built environment. Trees and stretches of parkland can soften the angular edges of buildings, while the natural tones of bark and foliage are easy on the eyes. Trees are known to be the most important factor in influencing the perception of a community's aesthetic value (Schroeder 1989). Trees and natural landscapes are associated with reduced aggression and violence (Kuo and Sullivan 2001), graffiti, vandalism, and littering (Brunson 1999).
	Physical Wellness and Fitness	Physical exercise and activity has been shown to reduce the risk of hypertension, coronary heart disease, stroke, diabetes, and breast and colon cancer (World Health Organization 2010). People who use parks and open spaces are three times more likely to achieve recommended levels of physical activity than nonusers (Giles-Corti et al. 2005). People in communities with high levels of greenery or greenspace are more likely to be physically active, and less likely to be overweight or obese (Maas et al. 2006 and Ellaway et al. 2005).
	Mental health and Function	Physical activity has also been linked to decreases in symptoms of stress and depression (U.S. Dept. of Health 1999). The opportunities to exercise provided by trails through forested parks and natural areas is therefore relevant to the treatment of these mental health ailments. Even basic mental function is improved, as the experience of nature helps restore the mind after the mental fatigue of work or studies, improving productivity and creativity (Kaplan 1995 and Hartig et al. 1991).
	Child Development	Experience with nature helps children to develop cognitively, emotionally, and behaviorally by connecting them to environments that encourage imagination, cognitive and intellectual development, and social relationships (Isenberg and Quisenberry 2002 and Heerwagen and Orians 2002). Green settings and green play areas also decrease the severity of attention deficit in children (Taylor et al. 2001).
	Health Benefits of Stewardship Activities	Volunteer stewards of all ages who regularly remove invasive species, plant trees, and perform other stewardship activities are likely to gain health benefits from physical exertion. In one hour, a 150-lb person can burn 340 calories from digging, gardening, and mulching; 306 calories from planting trees; and 292 calories from raking leaves (www.calorie-count.com).

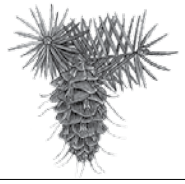
I. The Challenge
A Threatened Urban Forest

Urban forests throughout the Puget Sound region are being threatened by decades of invasion from aggressive nonnative species. In many urban areas, the only thing left is an unsustainable condition in which native trees and other vegetation are killed off and cannot grow back on their own. The result is what biologists call an ecological "dead zone," buried by ivy, blackberry, and other invasive plants.

Everett's Urban Forest

Everett's Parks and Recreation Department manages approximately 354 acres of forests, including wetlands, streams, shorelines, and buffers. From the 11 acres of woods in Thornton A. Sullivan Park to Forest Park's 197 acres of forested trails, Everett's publicly owned forests range from small to large and are broadly dispersed. These forested areas provide habitat for aquatic and terrestrial plants and animals, and maintain natural ecological processes within a highly developed setting. Surrounded by the city's built environment, each acre's contribution to water quality, air quality, and stormwater control becomes even more crucial. Everett's forests maintain distinct ecological communities that are becoming increasingly rare in urban areas.

Table 2. Common plants referenced in this plan

Invasive Plants		Native Plants	
	Himalayan blackberry *Rubus armeniacus*		Douglas-fir *Pseudotsuga menziesii*
	English Holly *Ilex aquifolium*		Red alder *Alnus rubra*
	Reed canary grass *Phalaris arundinacea*		Bigleaf maple *Acer macrophyllum*
	English ivy *Hedera helix*		Black cottonwood *Populus balsamifera*
	Bindweed *Convolvulus arvensis*		Western redcedar *Thuja plicata*

Many natural areas also give people opportunities for recreational activities such as using trails, viewing wildlife, and participating in interpretive educational and cultural programs. By reading signage or simply observing their surroundings, people are able to learn about their environment and the local natural history of the city, further connecting them to urban natural spaces. Additionally, people may also take advantage of their natural areas to simply take a break from the built environment.

There are some areas administered by Everett Parks that are not part of the Green Everett Partnership project. Park areas that include ball fields, playgrounds, beaches, orchards, or open fields provide important open-space benefits but are not considered appropriate for forest management. Open water and stormwater detention ponds are also excluded from the project area, as are hardscaped portions of parks, such as parking lots and hard courts. Therefore, out of approximately 628 total acres of Everett's city-owned and -managed parks (excluding Everett's two municipal golf courses), 354 acres are forested parklands in need of restoration and long-term maintenance. This is roughly 2% of the city's total land base. Although these natural areas are fragmented and broadly dispersed, they help define the city's landscape and contribute to local environmental health.

A Sustainable Forest

Historically, large, long-lived conifer forests dominated the Pacific Northwest. These forests included Douglas-fir, western redcedar, grand fir, and western hemlock trees. Conifer forests covered much of the landmass and extended throughout the Puget Sound region. Early settlers first disturbed these natural areas when they cleared the land for logging, development, or views; channelized and piped streams and seeps; and drained or filled wetlands.

Today, some of these cleared areas have been recolonized by short-lived, fast-growing native deciduous species such as bigleaf maple, cottonwood, willow, and red alder. With a healthy seed bank in the soil and without further disturbance, Douglas-fir and western redcedar eventually reestablish and move the forest back to a conifer-dominated condition. This process, known as succession, typically takes about 100 to 150 years in the Pacific Northwest, in areas where ideal growing conditions for trees and plants exist.

Challenges arise when human-generated disturbances, such as introduction of invasive plant species, prohibit the regeneration of the native forest. The Green Everett Partnership aims to remove the invasive plants suppressing the growth of native trees and understory, and replant with native shrubs, herbs, and trees. The Partnership will use the Pacific Northwest's historical forest conditions, specifically those found in the lowland Puget Sound region, as the reference habitat type for restoring and maintaining Everett's forested parklands.

Photo credit: Christopher Chung

The Threats

Forests in urban areas face unique pressures and problems that require specific attention. There are six basic problems preventing urban forests from sustaining themselves as native habitat:

- Fragmentation
- Declining canopy
- Invasive-dominated understory
- Native trees struggling to regenerate
- Illegal activity

Fragmentation

Habitat fragmentation is a problem common to urban environments and occurs when contiguous forest and natural areas are divided, often by development, landscaping, sports fields, and roads. This decreases valuable internal forest habitat and increases "edge effects" along the exterior, thereby increasing the forest's exposure to human impacts. Edge effects refer to the transition between two vastly different habitat types and its effect on the plant and animal communities in the remaining isolated natural area. A greater proportion of edge increases a forest's susceptibility to encroachment by invasive species from adjacent landscaped areas and the likelihood of water-quality issues due to polluted runoff. Habitats for birds, amphibians, and mammals become isolated from each other with the loss of connectivity through greenbelts or connecting corridors. Because of this unique pressure on urban forests, management of these areas is distinct from that of large swaths of rural forests and requires continuous vigilance against the spread of invasive species and other edge effects.

Declining Canopy

Several factors contribute to the loss of Everett's forest canopy in parks and open spaces. Compared with the region's native forest composition, deciduous trees make up more of Everett's forest canopy than is typical in a healthy Northwest forest. These early-colonizing species help establish a forest in a disturbed area, such as after the logging activity that occurred throughout the Pacific Northwest in the late 1800s to early 1900s, and again in the mid-1900s. Deciduous bigleaf maples, cottonwoods, and red alders now compose more than a third of Everett's forest canopy. Under natural conditions, as deciduous trees begin to die off, they are typically replaced by longer-lived conifers. However, Everett's urban forests no longer grow under natural conditions.

The high proportion of deciduous trees in Everett's upland urban forests means that there will be a pronounced decline in tree canopy in the near future. In many areas, the conifer seed bank has been lost through past logging and development. Many of the deciduous trees — both native and nonnative — are nearing the end of their natural life spans. As they die, more sunlight is allowed to reach the ground, resulting in perfect growing conditions for aggressive invasive species to flourish. The loss of tree canopy allows invasive plants to become the dominant species in many parts of Everett's forested parklands, inhibiting the growth of saplings. Without intervention to help ensure that enough young native trees are present in the understory to make up the next generation of canopy, this plan's technical analysis projects that the natural death of these deciduous trees could lead to a loss of a third or more of Everett's urban forest canopy.

Additionally, past removal of vegetation along many streams and wetlands resulted in a complete loss of native species cover. Many streams are now buried under a canopy of invasive species such as blackberry, ivy, or reed canary grass. The

loss of native vegetation along waterways results in significant impacts on stream temperatures and water quality, and negatively affects aquatic species, including the threatened salmon.

Invasive-Dominated Understory

Invasive plants now outcompete native understory plants in many of Everett's forested parklands. Aggressive, nonnative shrubs and vines cover the ground, blocking sunlight from and competing for nutrients with the native species. Robust Himalayan and evergreen blackberry bushes spread along the ground in large thickets, and their seeds are dispersed by birds to new locations. Invasive blackberry grows densely, choking out native plants and destroying native habitat for wildlife species. Blackberry thickets are especially aggressive when establishing themselves along creeks and gulches, which are found in a significant portion of Everett's parks. Currently, Himalayan blackberry is the worst invasive plant in Everett's parks, but English ivy is also present and beginning to take hold.

English ivy can kill a healthy deciduous tree within 20 years by spreading up from the understory into the tree canopy.

Ivy can easily spread from a neighboring residential landscape into a nearby park, where it will become a serious problem, as has been seen in many other cities throughout the region. Once ivy becomes established, an intense investment of time and resources is required in order to remove it. Where English ivy is in the early stages of blanketing forest floors and trees in Everett, there exists the opportunity to remove the existing early growth and prevent its further spread.

The native understory is an important food source for native Pacific Northwest wildlife and provides much-needed cover and shelter from predators and the elements. In addition to blackberry, reed canary grass, and ivy, other invasive species such as Scotch broom, English holly, and morning glory grow in the understory, crowding out ferns, shrubs, and other native plants. As invasive species begin to dominate the understory, the diversity of food and habitat available throughout the seasons is diminished. While some animals, such as rats, can live and even thrive in the dense monocultures of blackberry or ivy, quality habitat for most native wildlife is degraded by invasive species.

Blankets of blackberry on stream banks displace native riparian vegetation. Lack of riparian tree cover also decreases shade along creeks, causing the water temperature to rise, which reduces the amount of dissolved oxygen that the water can provide. These altered conditions impair water quality and overall suitability of salmon habitat in streams such as Pigeon Creek, which runs through Forest Park, and at Langus Riverfront Park along the Snohomish River.

In addition, environmental benefits such as stormwater retention, erosion control, and carbon sequestration are greatly decreased when invasive species displace complex communities of native vegetation that have grown together throughout this region's history. If the spread of invasive species is not prevented, the result is a dying urban forest overrun with sprawling thickets of blackberry and engulfed in ivy.

Native Trees Struggling to Regenerate

Native-tree-canopy regeneration — especially of conifers — is greatly limited in Everett's forested parklands for several reasons. The landscape-scale loss of native conifer trees due to residential and commercial development has reduced the seed source for these trees. At the same time, invasive plants are reducing native-tree regeneration by outcompeting or smothering those tree seedlings that do grow. Removal of nonnative invasive plants and planting native trees, shrubs, and groundcovers can help the process of native-tree regeneration move forward.

Illegal Activity

In addition to the indirect effects of human development and the results of the human-influenced natural history of the past few hundred years, illegal activity has had a direct impact on urban natural areas as well. Dumped garbage is a common problem in parks and natural areas throughout the city. Garbage can leach chemicals into the ground, spread invasive species, become a hazard for wildlife, and crush or smother understory vegetation. Trees are damaged and cut for views or firewood, or in acts of vandalism. Encroachments onto public land from adjoining private property and encampments also bring with them any number of problems for natural areas, including landscaping, vegetation removal, built structures, domestic animals, and more garbage, as well as safety concerns.

While addressing all types of illegal activity will require sensitivity, the issue of homeless encampments is undoubtedly among the most complex. Additionally, the sanctuary from built environments that parks and natural areas provide can also be a refuge for other forms of illegal activity, such as drug use and violent crime. This can be an unfortunate

PRESENT
Forested parklands are dominated by deciduous trees, mainly bigleaf maples and alders, nearing the end of their life. After decades of neglect, nonnative invasive plants, such as English Ivy and wild clematis, cover the ground and grow up into the tree canopy.

IN 20 YEARS
Invasive plants outcompete and grow over existing native vegetation, blocking the sunlight plants and trees need to thrive. English ivy now dominates the tree canopy, making the trees weak, top-heavy, and susceptible to wind throw. Eventually, trees die or fall over.

IN 50 YEARS
The trees are gone. Only a few native shrubs struggle to survive the stress of competition with invasive plants.

IN 100 YEARS
The forest is destroyed. Native trees can no longer establish on their own. We are left with a dense "ivy desert." Very few native understory plants can live, and forest biodiversity is lost. These ivy monocultures provide good homes for unwanted rodents and poor habitat for desirable urban wildlife.

Figure 2. A projection of forest decline

reality of natural-area management, especially in an urban setting, that challenges every community. When enough illegal activity takes place, parks and natural areas can become known more for the illegal pursuits they might harbor than for the valuable benefits they provide. Reversing this reputation takes a concerted effort to bring more attention and activity in general to such areas. Problems can often arise when people think of undeveloped parks as "empty" or "abandoned" property.

However, as an important aspect of responsibly caring for an urban forest, and for public spaces in general, addressing illegal activity also provides significant opportunities for community engagement. Restoration projects led by the community itself will help reclaim such areas as positive public spaces for everyone by regularly bringing more eyes to watch out for them and increasing a sense of public ownership and responsibility. Expanding public awareness and building a self-sustaining, robust, and active volunteer Forest Steward Program that has high ownership and valuation of the urban forest is therefore one of the main intended outcomes of the Partnership.

Resource Limitations on Natural-Area Management and Restoration

In the past, resources for natural-area management were limited. The idea that forests and natural areas could take care of themselves tended to discourage allocating sufficient funds for planting native species or removing invasive plants. Many urban natural areas across the Northwest were left to benign neglect under the assumption that they were self-sustaining and not susceptible to changing conditions and outside influence. This passive management has directly led to declining health in unsupported urban forests and other natural areas.

To reverse this trend, this plan recommends additional investment in the active management of forested parklands and natural areas. Natural succession cannot occur without a conifer seed base and healthy understory, both of which are currently missing or greatly impaired. Trees are now recognized as city and community assets — or infrastructure — and need to be maintained as such with attendant planning and budgeting. Unfortunately, the level of need exceeds current staffing and funding. By continuing to engage the community in a more structured effort to manage forested parkland, this plan seeks to leverage volunteer matches to target this need.

Current Staffing

The Park Maintenance Division currently has 25 full-time employees, 11 seasonal employees who are 3/4 time, and approximately 15 seasonal employees in six-month positions; collectively, they are responsible for operations, maintenance, and administration of Everett's park grounds, facilities, and many of its landscaped areas. Of those, approximately eight full-time, four seasonal (3/4 time), and six seasonal (six-month) employees hold positions specifically related to natural-area stewardship, including urban forestry and trail maintenance, in addition to working on street trees (in selected areas of the city). Unless the city increases staffing, these positions will need to be supplemented with community involvement to address the additional needs of restoring and maintaining Everett's urban forested areas. Consequently, it is critical that forest stewards have a skill set that can accommodate minimal oversight.

Funding

The Parks Department's 2012 revised operating budget (which includes recreation but excludes golf) was $9,076,869. The budget for the two sections primarily related to grounds maintenance, forestry, landscaping, irrigation, etc. was $2,752,355. One of the necessary tasks subsequent to the finalization of the Green Everett Partnership 20-year plan is to identify the available funding that will go toward promoting and supporting the Partnership's activities.

Occasional grants for natural-area restoration are available from programs and organizations such as the Conservation Futures Program, Washington Wildlife and Recreation Program, Washington State Department of Transportation mitigation projects, and the Snohomish County Department of Natural Resources. While most of the grant funding is adequate for specific, one-time projects, these grants do not typically fund ongoing activities that will allow Everett to carry out a continuing stewardship program.

Community Investment

In 2011, volunteers undertaking forest-related stewardship-type activities in Everett Parks contributed an estimated 2,000 hours. Those volunteers pulled invasive plants, picked up litter, planted native species, and helped with other maintenance tasks in Everett's parks and natural areas, making up about 17% of the 12,000 volunteer hours Everett Parks and Recreation reported in 2011. At Washington State's estimated volunteer value ($21.79 per hour), that was a significant leverage to Everett's funding.

However, with 354 acres of forested parklands to manage, invasive species growth is quickly outpacing these efforts in many areas of the city. Volunteer hours must significantly increase if the decline of Everett's forests during the next 20 years is to be reversed. Prior to the formation of the Green Everett Partnership, there has been a group of volunteers removing invasive plants and working to restore Forest Park. This is the only community group we identified during this plan's development that was active and dedicated to forested parkland restoration in Everett. A citywide network of information and resources will need to be made available to support a growing volunteer base. With long-term community investment, Everett's forested parklands can be sustained long into the future as high-quality capital assets.

II. The Solution
The Green Everett Partnership

The Green Everett Partnership is building a sustainable network of healthy forested parklands for the benefit and enjoyment of current and future generations.

The Vision

The Green Everett Partnership's vision is to have healthy forested parklands supported by an aware and engaged community in which individuals, neighborhoods, nonprofits, businesses, and city government are all working together to protect and maintain their valuable public resources. The envisioned urban forestry-management program will be dedicated to restoring and maintaining forested parklands while fostering appreciation and understanding of the long-term benefits that urban forests provide to the City of Everett.

A sustainable forest will contain a multi-aged canopy of trees, where invasive species pose a low threat, and a forest floor alive with native plant species that provide habitat to a diversity of native wildlife. If taken care of, the urban forest is an important asset that can serve the community in many ways. Forest growth will build soil, improve air and water quality, retain stormwater, and help mitigate greenhouse gas emissions. Stewardship activities in natural areas will provide access and possible options for establishing new trails where appropriate. Trails through natural areas will offer the cultural and recreational benefits necessary for a livable city.

Within the city's current advisory committee structure, the Board of Park Commissioners advises the Parks Department, mayor, and city council on matters related to parks and recreation. The Board also has a formal subcommittee called the Tree Committee, whose role is related to trees within the city. This role includes citizen education, recommendations regarding tree policies, and the preparation of an annual report related to the city's urban forest.

For several years, the Tree Committee has identified the need for a city tree inventory. Additionally, Parks staff has recognized the need to leverage its resources with interested people and groups to help rehabilitate, maintain, and restore much of the city's urban forest, under Parks Department management.

Though interest has been high, the preparation of a tree inventory and the development of a volunteer-based and -led stewardship program were not financially feasible during what has been called the Great Recession of 2008/09. But as the economy slowly and steadily improved beginning in 2010, four funding partners — the city, Forterra, The Boeing Company, and the USDA Forest Service — came together to develop a volunteer stewardship program, conduct a forest assessment, and develop a 20-year forest management plan. A two-year professional services agreement between the city and Forterra was signed on April 9, 2012, to launch the effort, formally known as the Green Everett Partnership. Upon signing, Everett became Snohomish County's first Green Cities Partner.

Outcomes

Achievement of the Green Everett Partnership's long-term vision is important and will be beneficial in a variety of ways. It will help preserve Everett's healthy forested parks and open spaces and the many benefits they provide, while at the same time educating and inspiring the community to help the city care for these resources. Specifically, it is anticipated that during the next 20 years, the following outcomes will occur:

1. Improvements in the diversity and health of the city's urban forest — all 354 acres enrolled in restoration and actively managed during the life of the program.

2. Quality-of-life enhancement through the public's use and enjoyment of an improved urban forest.

3. Positive economic effects and enhancement of the ecosystem services and social and physical health benefits that a healthy urban forest provides (clean air, clean water, stormwater retention, wildlife habitat, access to recreation, community building, etc.).

4. A sustainable, robust, and active Forest Steward Program with volunteers who have a high ownership stake in, and appreciation for, the city's urban forest.

PRESENT → **IN 20 YEARS** → **IN 50 YEARS** → **IN 100 YEARS**

Forested parklands are dominated by deciduous trees, such as bigleaf maples and alders, nearing the end of their life. After decades of neglect, nonnative invasive plants such as English ivy are smothering native vegetation and weakening native trees.

Through restoration efforts and long-term maintenance, the nonnative plants are removed. Native groundcovers, shrubs and evergreen trees such as Douglas-firs, western redcedars, and hemlocks are planted.

As the everegreen trees grow, they shade out sun-loving invasive plants such as Himalayan blackberry. Native understory plants thrive.

With continued stewardship, the maturing forest requires less care and provides greater benefits to the city.

Figure 3. A projection of forests returning to health

Goals

For the Green Everett Partnership's vision and outcomes to succeed, several goals — short-, mid-, and long-term — must be achieved during the next 20 years. The following goals along with benchmarks (see Appendix H), were developed based on current forest conditions, Everett Parks' capacity to support restoration efforts, and the experience of other similar-size Green Cities. Section IV describes the process of monitoring and tracking the program's success in more detail.

Short-Term Goals (1–5 years)

1. Develop and implement a Forest Steward Program that recruits, trains, and retains a growing number of dedicated volunteers.

2. Identify priority parks for restoration and work with forest stewards to develop a formal work plan for each park that identifies the type of work, location, conduct, sequencing, frequency, and expected outcomes (metrics).

3. Identify and work with citywide initiatives and priorities that align with the Green Everett Partnership vision and outcomes, such as an increase in trail access through natural areas, enhancement of wildlife habitat, and inclusion in the next update of the Parks and Recreation Department's strategic plan.

4. Create and implement a public-involvement plan to educate and engage the community.

5. Celebrate the Partnership's successes.

Midterm Goals (5–10 years)

1. Expand the Forest Steward Program to remaining parks/ open spaces identified in the 20-year plan.

2. Update the forest assessment to include land added to Parks Department management.

3. Expand the Green Everett Partnership to include organizations and groups that can assist with the achievement of the plan's vision.

4. Provide periodic training opportunities to forest stewards to help ensure their efforts benefit from urban-forestry-stewardship best practices.

5. Establish resources to sustain the program for the long term.

6. Celebrate the Partnership's successes.

Photo credit: Juliet Violette

Long-Term Goals (10–20 years)

1. Develop and deliver to the community a mid-plan status report.

2. Update the 20-year plan.

3. As appropriate, expand the Forest Stewardship Program to city-owned land under the management of others.

4. Celebrate the Partnership's successes.

The Structure

Based on the experience of the five other Green Cities, this section describes a management structure model that has been modified for the Green Everett Partnership (described in Table 3). The structure is intended to support several thousand community volunteers, city and nonprofit staff, and skilled field crews, who will implement the Partnership by performing the work needed to achieve plan goals. In the Partnership's first two years, a primary task will be planning and decision-making, working closely with Forterra as necessary to establish a strong program. Once the program is up and running, the Partnership will establish a management-oversight team to help guide the program's planning and implementation to achieve plan goals. All three program areas (community, fieldwork, and resources) should be part of this process, including tracking and reporting each area's progress. In the first five years, the focus is on building and supporting a volunteer base, spreading program awareness, and demonstrating restoration results on the ground. As community support becomes established, staff time can be reallocated to the fieldwork component, especially for volunteer management and coordination of the work done by forest stewards and skilled field crews.

Support staff will help facilitate implementation work by coordinating resources and communication across the Partnership. There will also be a need to seek the necessary near-term funding and resources to help meet program goals. Partnering organizations, such as Forterra and other organizations and businesses, can help provide staff, support, and resources not available through the City of Everett.

During these initial years, the Everett Board of Park Commissioners and Tree Committee will provide guidance and oversight in coordination with the Everett Parks Management Team. If the city decides to pursue supplemental public funding strategies or corporate sponsorship, the Partnership may benefit from establishing a Community Advisory Committee. This committee could include community members and representatives from major donors and local corporate sponsors, along with the city and Forterra. The key roles of the Community Advisory Committee could be to advance the larger goals of the Partnership, provide guidance regarding budgets and funding, and garner community support.

All of this is designed to provide resources to support and track on-the-ground fieldwork undertaken by volunteers and skilled field crews (city staff, nonprofits, and other professional contractors). Without advance planning and structure for the Green Everett Partnership, the fieldwork will not be as successful, efficient, and organized as it should to achieve the plan's goals during the next 20 years.

Roles and Responsibilities

Program staff will include members of the following agencies and organizations:

City of Everett

Everett Parks and Recreation Department

Most of the Green Everett Partnership's roles and responsibilities will be directed and lead by the Everett Parks and Recreation Department. The Everett Parks Management Team will oversee the initial planning and program building. Within Parks, the Horticulture and Forestry Division is responsible for maintenance of the city's forested parklands and provides the majority of support to on-the-ground restoration projects, such as delivering materials and performing restoration tasks that volunteers are not permitted to perform. The Horticulture and Forestry Division is led by a supervisor with a crew of eight full-time staff and four seasonal employees (3/4 time) working to maintain trails and landscaped and forested areas. The staff is directed by the Parks Assistant Director for Project Planning and Maintenance.

Parks will continue to house the Partnership's budget within its general operating fund and will provide the Partnership with technical expertise and a small skilled forest-management workforce. Parks will also coordinate and help fund the work done by community volunteers, its city staff, nonprofits, and professional contractors where necessary. Parks' role is seen as one that actively supports volunteer restoration efforts by providing materials, equipment, and supervision. This includes planning and carrying out the fieldwork itself, record-keeping, and setting annual goals and site priorities based on plan benchmarks. Park staff will be able to utilize Forterra's resources from other Green City Partnerships, Everett-specific field data, and established best management practices to help direct the plan's implementation.

Table 3. Management structure*

GUIDE	**Community Advisory Committee**		
	Provides oversight and advisory guidance with respect to larger Partnership goals and resource allocation. The Community Advisory Committee is made up of representatives from all stakeholders, including the public, and fills an advisory role complementing the Management Team's work.		
PLAN	**Parks Management Team**		
	Creates work plans, tracks accomplishments, oversees general program direction, and manages Partnership's resource allocation. The Management Team includes staff responsible for enabling the work in the three program areas below.		
	Fieldwork Committee	Community Engagement & Education Committee	Resource Committee
	Plans, oversees, and tracks fieldwork, BMPs, and restoration training for volunteer sites and professional crew sites. Also coordinates requests for tools, materials, and assistance.	*Plans outreach and marketing strategies for recruitment and retention of community volunteers and forest stewards.*	*Explores and pursues grants and fund-raising opportunities.*

IMPLEMENT	**Public**		**Private**
	Everett Parks and Recreation • *Management* • *Field crews*	*Community* • *Volunteers* • *Forest stewards*	*Forterra and other nonprofits* *Local business partners* *Contractors and consultants*

** During the first two to three years, the Parks Board and Tree Committee will provide oversight.*

Everett Parks' goal is to be in a position to conduct local outreach to recruit new volunteers in publications such as the quarterly Everett Parks and Recreation guide, Parks and city social media, and park kiosks. Staff will also be able to work with other city departments to promote and publicize the Partnership's activities when appropriate opportunities arise.

Nonprofit Organizations

Forterra

With grant funding from The Boeing Company, Forterra organized the research and planning in the first year leading up to the preparation of this 20-year plan, including coordinating field surveys conducted by a forestry consultant and analysis of the results. Forterra worked closely with Everett Parks to assess the city's current capacity to provide resources for restoration and natural-area stewardship, and to identify applicable policies, funding sources, and community members to engage in the program. Forterra will continue to work in partnership with the City of Everett and the community to articulate and advance the goals and vision of the Green Everett Partnership. To meet these goals, Forterra will work closely with Park staff to implement restoration in priority parks and establish systems for hosting work events and recruiting volunteer forest stewards. Forterra will also advise on further 20-year plan implementation and the development of annual plans, offer technical training and support for staff and volunteers, advertise volunteer events, and provide networking opportunities for funding and resource support among other Green City Partners. Additional staff for field crews, program management, outreach, marketing, development, and coordination with other Green City Partnerships may be provided by Forterra through subsequent contract work, if needed by the city.

Other Organizations

It is the Partnership's intent to look for opportunities to collaborate with various organizations that share common goals. Reaching out to various nonprofit organizations and community groups that serve the Everett area, such as the Washington Native Plant Society, Audubon, and Adopt A Stream Foundation, can only strengthen and leverage community support for the program. Regional organizations with conservation crews such as EarthCorps, the Student Conservation Association, and the Washington Conservation Corps play a significant role in urban-forest restoration in the Pacific

Northwest. These organizations provide service-learning and job-training opportunities for program participants and offer high-quality restoration crews. For the Green Everett Partnership, these groups may supplement work performed by Everett Parks in the following capacities:

- Organize, recruit, support, lead, and/or train community volunteers.
- Facilitate involvement of other youth, civic, business, and community organizations.
- Perform restoration work in areas that cannot be served by volunteers or in areas where the city directs such work.

Volunteers

Through the Green Everett Partnership, community volunteers provide the core labor for restoration and maintenance of forested parklands. They bolster community interest and support for local parks and natural areas through their advocacy. A key responsibility of the Partnership will be to work with community members to provide field leadership training and site-planning. Volunteers committed to a restoration site in their local park will be encouraged to take on additional responsibilities and receive special training as forest stewards. An active and educated group of forest stewards is essential to expanding the Partnership's capacity to work in many parks simultaneously and will help shape the work to fit the needs of particular neighborhoods. Individual volunteers and groups will be recruited to support forest stewards with their forest restoration projects.

Commercial Crews

Commercial restoration crews are an additional resource that may be hired if needed and budget allows. The crew's focus would be on steep slopes and other difficult sites that require more technical work. Currently, there are a limited number of firms that provide these services. If parks staff do not have the capacity to meet the needs for skilled field crews, contracted projects can offer opportunities for a growing workforce of trained landscapers, forestry, and restoration professionals.

How can you join the *Green Everett Partnership* ?

- Become a forest steward
- Volunteer to remove invasive plants
- Volunteer to plant native plants
- Volunteer to maintain the restoration sites
- Encourage your neighbors to participate
- Help with publicity and marketing
- Take photographs of sites and volunteer events
- Help with record-keeping and administration
- Help raise funds for the Partnership

Funders and Sponsors

This plan was made possible, in part, through a generous grant from The Boeing Company. Corporate sponsors like Boeing, foundations, and private donors are key partners and stakeholders in the Green Everett Partnership. These stakeholders may be able to help address funding gaps in implementing the program.

Corporate sponsors will have opportunities to support the Partnership beyond financial donations. Many corporations offer their employees opportunities to volunteer for various community projects. Corporations and local businesses will be invited to participate in large volunteer restoration events, providing a substantial volunteer labor resource. Sponsors may also be asked to make other contributions as appropriate. For example, it is not uncommon for firms to help defray expenses by donating event supplies, coffee and snacks, or services such as graphic design, advertising, or event planning that can be provided through their companies. In return, these corporations receive the opportunity to engage with the community and contribute to a healthier, more livable urban environment.

Private Landowners

Private and public lands create a patchwork of natural areas across the city of Everett. Private lands serve as vital connectors between fragmented public greenspaces. Many of the pressures on Everett's forested parks are related to the actions of people, which can either enhance surrounding public spaces or lead to their degradation.

Landscaping choices or lack of maintenance on private property is a major source of invasive plants that spread to public parks. Illegal dumping of yard waste debris on park property also leads to the spread of invasive plants and smothers healthy plant communities. Everett landowners who live adjacent to forested parks can be encouraged to be more active in stewardship of their land. Efforts to educate landowners about the benefits of native shrubs and trees, and the problems of invasive species such as English ivy, can play a key role in preventing the continued spread of invasive species throughout the city. Working with landowners through education programs will help the Partnership generate a community that cares about the well-being of natural areas, both on their own lands and in Everett's public spaces. Engaging these landowners as invested stakeholders could mobilize an important corps of advocates and volunteers to reverse the trend and improve the health of their property and the parks.

III. Implementation

The Green Everett Partnership implementation strategy includes a balance among the three program areas: field work, community, and resources.

As in the other Green City Partnerships, a Balanced Scorecard approach is used to develop and adapt the Green Everett Partnership implementation strategy (see Table 4). The Balanced Scorecard is a widely used business tool that both helps develop a strategy and monitor progress as that strategy is carried out.

The Balanced Scorecard helps define and align the efforts of complex organizations to achieve targeted outcomes. With these metrics, the Partnership can track the success of various activities and set benchmarks during the plan's 20-year course. The traditional private sector scorecard balances profits, customer satisfaction, and employee welfare by listing goals and quantifying measures that indicate if actions meet the goals. Its layers focus on increasing shareholder value.

For the Green Everett Partnership, the layers are modified to reflect the ultimate goal of a healthy and sustainable urban forest. These layers include the plan's key elements: community, fieldwork, and resources. The objectives within each layer are outlined in Figure 15, the Balanced Scorecard Strategy Map, which shows how activities can have reciprocal relationships. For example, volunteers are critical to accomplishing fieldwork, while demonstrating progress in fieldwork is essential to motivating and retaining volunteers. Similarly, the Partnership needs community support to secure the financial and volunteer resources to restore and monitor sites in the long term. By looking at the complete picture in layers that build on each other, the Partnership can coordinate efforts across various work areas so that activities are interconnected and mutually supportive.

The ability of managers to track progress during the next 20 years will allow challenges to be identified early. In response, managers can modify or adapt the program to address and resolve those challenges.

Table 4. Balanced scorecard elements

*The desired **outcomes** of the 20-year plan are*:

- ✓ Improvements in the diversity and health of the city's urban forest - all 354 acres enrolled in restoration.
- ✓ Quality-of-life enhancement through the public's use and enjoyment of an improved urban forest.
- ✓ Positive economic effects and enhancement of the ecosystem services and social and physical health.
- ✓ A sustainable, robust, and active Forest Steward Program.

Element		Action
	Field	How on-the-ground strategies will be carried out to restore and maintain 354 acres of parks and natural areas.
	Community	How an engaged community and a prepared workforce will be maintained in the long term, and how private landowners will be educated and encouraged to complement the efforts of the Green Everett Partnership.
	Resources	How sufficient financial, paid labor, and volunteer resources will be garnered to implement the plan.

Field

Fieldwork is at the heart of the Green Everett Partnership. Active management of field sites will include restoration, maintenance, and monitoring. The work will target removing invasive plants and establishing native vegetation as appropriate. A citywide evaluation of Everett parks included in the project was conducted in order to prioritize restoration efforts and guide goal development.

Field Objective 1: Evaluate Existing Conditions

Everett's urban forests are fragmented, disturbed, and impacted by invasive species — all of which pose numerous challenges to forest management. Traditional forest analysis methods and management tools do not adequately address the problems facing urban landscapes. The tree-iage analysis (originally developed by the Green Seattle Partnership) is an approach to assess habitat conditions in urban forests. The model is based on the medical triage concept and uses tree composition and invasive species cover to prioritize restoration.

The broad variation in Everett's forest stands is typical of urban areas throughout the Puget Sound region. Some stands contain mature conifers with a rich collection of Northwest native understory plants. Other stands contain mature red alders and bigleaf maples with significant nonnative blackberry and ivy patches in the understory. Given this wide variation, the tree-iage analysis was developed to better characterize these conditions. It may be applied to evaluate the system-wide forest condition or in individual parks to help define park-specific restoration priorities.

The tree-iage analysis uses tree canopy composition and invasive species cover as its two parameters. Without disturbance, most of Everett's parks would be dominated by mature evergreen coniferous trees, with a medium- to high-density canopy, mixed age classes, and species diversity. These high-quality forest stands, without invasive species, represent a typical lowland Puget Sound forest — the reference for this analysis.

This type of forest provides greater ecological benefits than shorter-lived pioneering forests of bigleaf maple and red alder. Some habitats, such as wetlands, riparian corridors, or steep slopes, however, may not be appropriate for conifers; in these circumstances, a composition of other tree and shrub species may be more suitable.

It is important to note that this methodology produces an overall condition at any one park and on a city scale; site-by-site analysis will need to be done as work progresses to help ensure the most appropriate restoration practices and species composition are chosen for each site.

Methodology

The Green Everett Partnership's efforts will focus on the 354 acres of forested parklands owned and managed by the City of Everett's Parks Department. The park areas included in the Partnership's scope are those areas that currently support, or have the potential to support, tree canopy coverage greater than 25% as well as some forested and shrub-dominated wetlands that do not support a full tree canopy.

While street rights-of-way and landscaped parks provide important open-space benefits and should be targeted for maintenance and tree canopy development, they have not been included in the current scope of work.

Baseline ecological data was collected during the fall of 2012 by American Forestry Management, Inc., a local forestry consulting company, using a data collection protocol called the Forest Landscape Assessment Tool (FLAT). FLAT was adapted from the traditional data collection protocols used for tree-iage analysis by the Green Cities Research Alliance (www.fs.fed.us/pnw/research/gcra). Contributors included the USDA Forest Service, American Forestry Management Inc., King County, Forterra, and the University of Washing-

ton. The FLAT adaptation builds on the existing framework of the tree-iage analysis to further support forest management needs. This includes additional forest health metrics, as well as alternative habitats, such as wetlands, where full coniferous canopy cover may not be appropriate.

Attributes included in FLAT that were not part of the initial tree-iage data collection include stocking, crown closure estimates, and a number of overstory forest health indicators. Attributes relating to forest canopy health include low tree-canopy vigor, root rot, mistletoe, bare soils due to erosion, and the presence of regenerating trees (canopy species less than 20 feet in height), which play an important role in the long-term sustainability of the forest canopy. In addition, each stand was deemed "plantable" or "not plantable" based on whether site conditions were appropriate for tree seedling establishment. However, Green Everett Partnership staff and forest stewards will develop more-detailed site-level stewardship plans to further assess planting conditions and outline management recommendations as the 20-year plan is implemented. See Appendix H for the FLAT-modified data collection flowchart of the initial tree-iage analysis.

Prior to field data collection, forest stands within Everett's parks were classified through digital ortho-photo interpretation, dividing each stand into one of five categories: forested, natural, open water, hardscaped, or landscaped. These initial stand-type delineations were ground-verified in the field, and if necessary, the delineations were corrected or the boundaries were adjusted in the Geographic Information System (GIS). The delineated stands are referred to as Habitat Management Units (HMUs). All HMUs were assigned unique numbers to be used for field verification and data tracking. Hardscaped, landscaped, and open-water areas, since they are not suitable for active native vegetation management, were removed from the total acreage targeted by the Partnership.

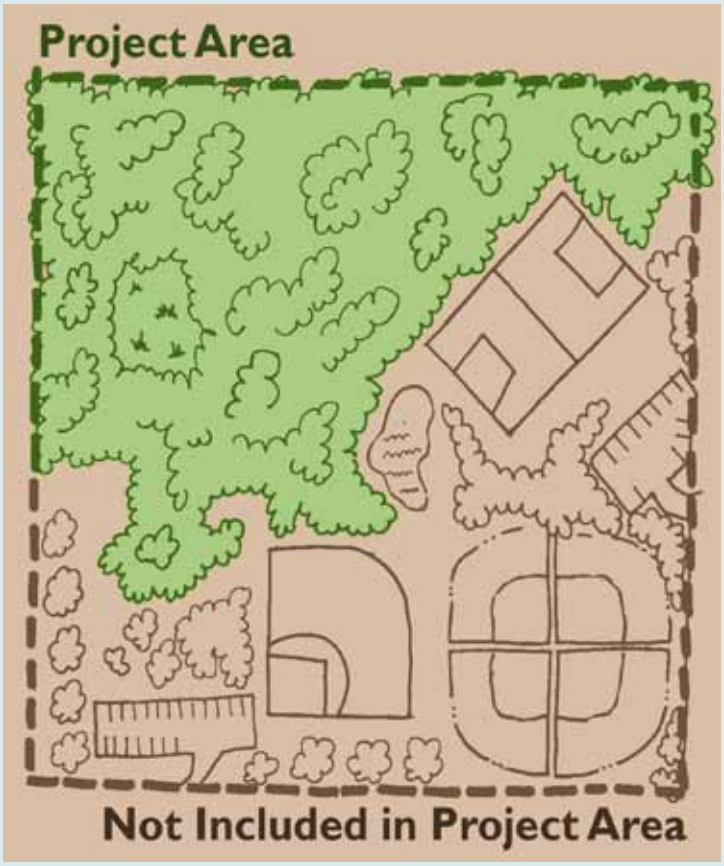
Defining the Project Area

Included in the Green Everett Partnership project area:

- Forests
- Meadows
- Wetlands
- Streams
- Shorelines
- Buffers

NOT included in the project area:

- Ball fields
- Playgrounds
- Beaches
- Orchards
- Landscaped gardens
- Open fields
- Open water and mowed stormwater detention ponds
- Hardscaped portions of parks and natural areas e.g., parking lots and hard courts
- Private property



In the field, each HMU was surveyed to capture information on primary and secondary overstory species and size class and primary and secondary understory species. *Primary* refers to those species most abundant in the HMU, and *secondary* refers to the second most abundant species in the HMU. The prevalence of invasive species was also documented. From this data, each HMU was assigned a value (high, medium, or low) for overall tree composition, according to the following breakdown:

HIGH:
HMUs with more than 25% native tree canopy cover, in which evergreen species and/or madrones make up more than 50% of the total canopy.
OR, HMUs with more than 25% native tree canopy in partially inundated wetlands that can support 1%–50% evergreen canopy.
OR, HMUs in frequently inundated wetlands that cannot support evergreen/madrone canopy.

MEDIUM:
HMUs with more than 25% native tree canopy cover, in which evergreen species and/or madrones make up between 1% and 50% of the total canopy.
OR, HMUs with less than 25% native tree canopy cover, in partially inundated wetlands that can support 1%–50% evergreen/madrone canopy.

LOW:
HMUs with less than 25% native tree canopy cover.
OR forests with more than 25% native tree canopy, in which evergreen species and/or madrones make up 0% of the total canopy.

In addition, each HMU was assigned one of the following invasive cover threat values:

HIGH: HMUs with more than 50% invasive species cover.

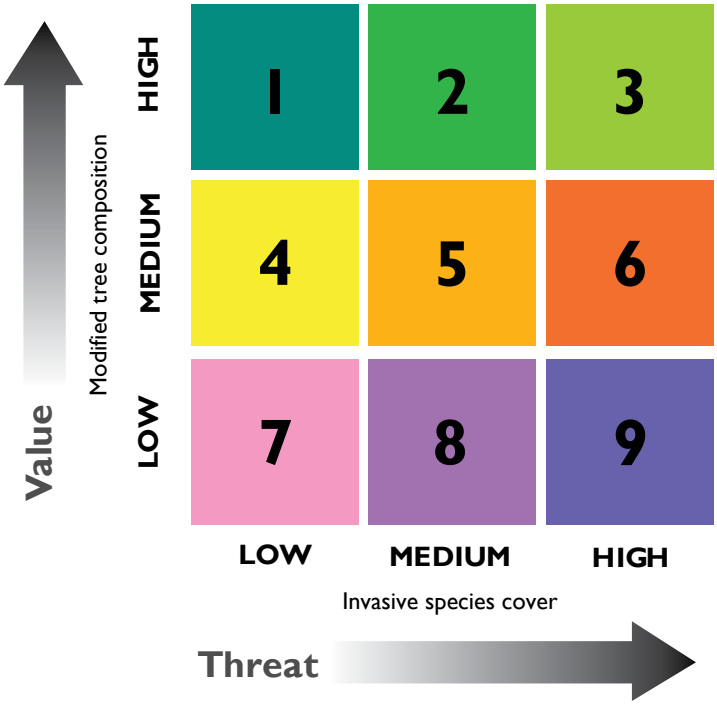
MEDIUM: HMUs with between 5% and 50% invasive species cover.

LOW: HMUs with less than 5% invasive species cover.

After tree composition and invasive species cover values were assigned, a matrix system was used to determine a priority rating for each HMU (Figure 4). For example, an HMU that appears in category 3 was scored high for canopy value and high for invasive cover threat. HMUs scoring low for canopy value and medium for invasive cover threat were assigned to category 8 based on the tree-iage analysis.

It is important to note that this data was collected to provide a broad view of the forest conditions in Everett's parks. Data collection occurred at the HMU scale. But because HMUs are different sizes, results are presented here using average conditions associated with each HMU. Small pockets within HMUs may differ from the average across the stand. The plan refers to the area presented as an "HMU acre." Keeping in mind the purpose of the tree-iage analysis, this assessment will help prioritize restoration efforts during the next 20 years. The data gathered will also serve as a baseline from which the effectiveness of restoration efforts and the long-term health of Everett's natural areas can be assessed in the future.

Figure 4. Tree-iage legend



Results

Tree-iage Matrix

From the data gathered on all HMUs during the forest assessment, a picture of Everett's forested parkland begins to form. Figure 5 shows the distribution of acres in each tree-iage category. By summing the acres in each row and column, one can see how much of the total project area (354 acres) currently has low, medium, or high canopy value, and how much currently has low, medium, or high threat from invasive species.

Only 2% of the acreage in Everett's forested parks is in exceptional condition (tree-iage category 1) with high-value canopy and low invasive cover threat. However, combining tree-iage categories 1, 2, and 3 shows that 31% of the acreage has high-value canopy composition. Just more than half of the acres have medium canopy composition (60% in categories 4, 5, and 6). Only 9% of the forest fell into the low-value canopy range (categories 7, 8, and 9), a positive sign for Everett's forested parks.

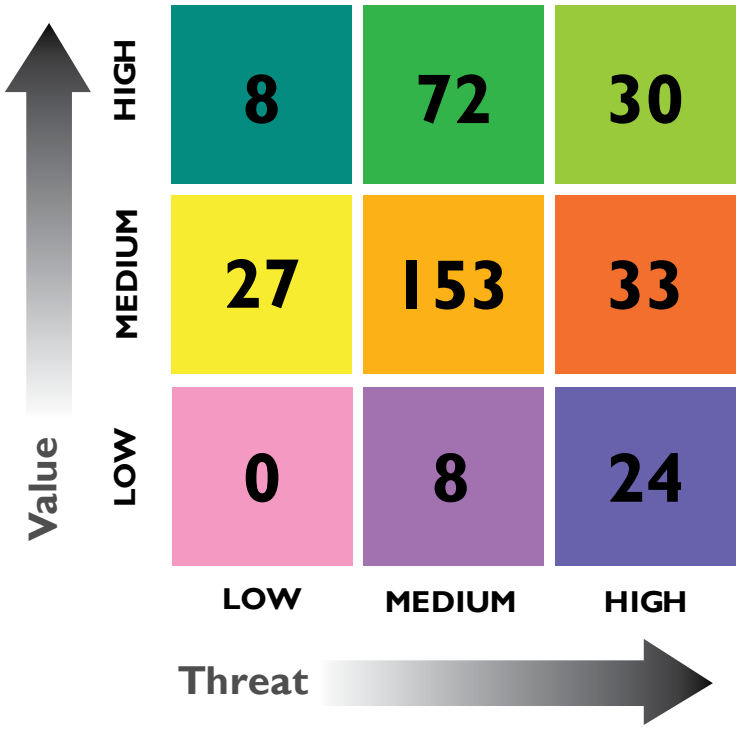


Figure 5. Distribution of HMU acres by tree-iage category

The second axis of the tree-iage matrix is the threat from invasive species, which is based on the percent of the HMU that is covered by invasive species. Two-thirds of the acreage falls in the medium category for invasive species threat. About 25% of Everett's forested parks have high invasive species threat (more than 50% invasive cover in categories 3, 6, and 9). Conversely, only 10% have low invasive species threat (less than 5% in categories 1, 4, and 7). Appendix B lists the tree-iage categories within each park.

Table 5. HMU acres by tree-iage category and percent of project area

Tree-iage Category	Acreage	Percent
1	8	2.2%
2	71	20.2%
3	30	8.3%
4	27	7.5%
5	153	43.2%
6	33	9.3%
7	0	0%
8	8	2.3%
9	24	7.0%
Total	354	100%

Overstory Species

The assessment results show that Everett's parks are dominated by middle-aged stands made up of mixed conifer/deciduous tree species (see Table 6).

A more-detailed analysis of the data shows that Everett has a large amount of mature bigleaf maple and red alder as both primary and secondary overstory species. Additional overstory species include mature Douglas-fir, black cottonwood, and to a lesser extent, western redcedar, which primarily shows up as a secondary overstory or regenerative tree species. The top five regenerating tree species present are bigleaf maple, red alder, western redcedar, western hemlock, and willow species (see Figures 6 and 7).

Overall, several key indicators of forest health decline were observed across the project area, including low vigor (less than 40% live crown), root rot, bare soil, mechanical tree failure, mistletoe, and bare soil from recent disturbance or erosion. Of the 354 acres targeted by the Partnership, indicators of forest health decline were present on 155 acres, just under half of the total (see Figure 8).

Table 6. Overstory forest types

Overstory Type	HMU Acres	Percent of Total Project Area
Coniferous	15	4%
Deciduous	42	12%
Mixed	273	77%
No overstory	24	7%

Figure 6. Primary and secondary overstory species by total HMU acres

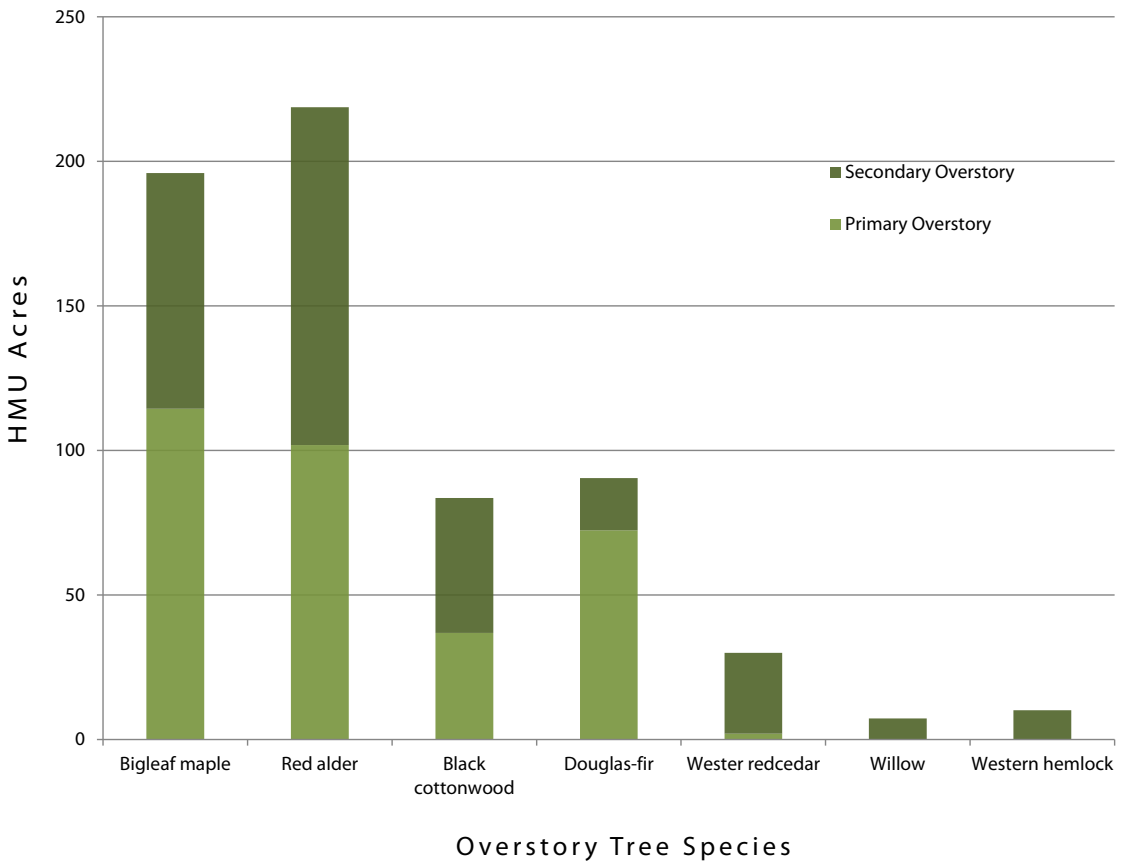


Figure 7. Top five regenerating tree species by total HMU acres

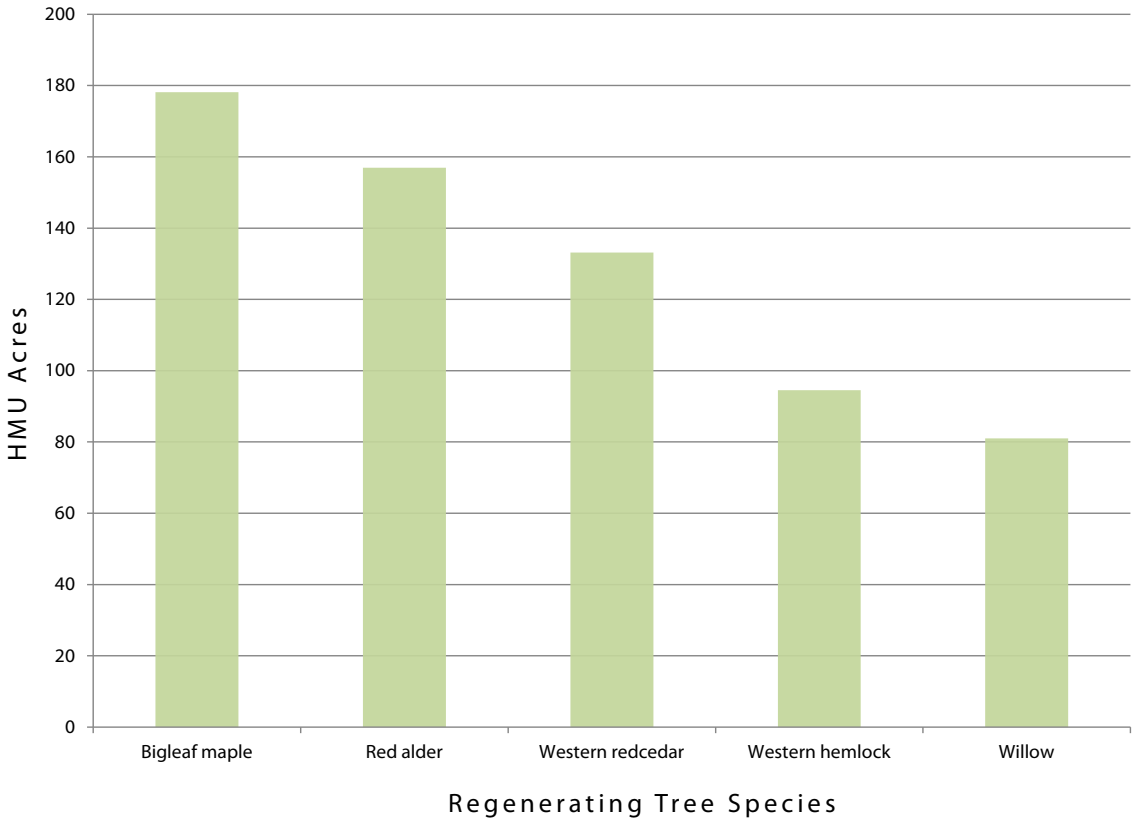
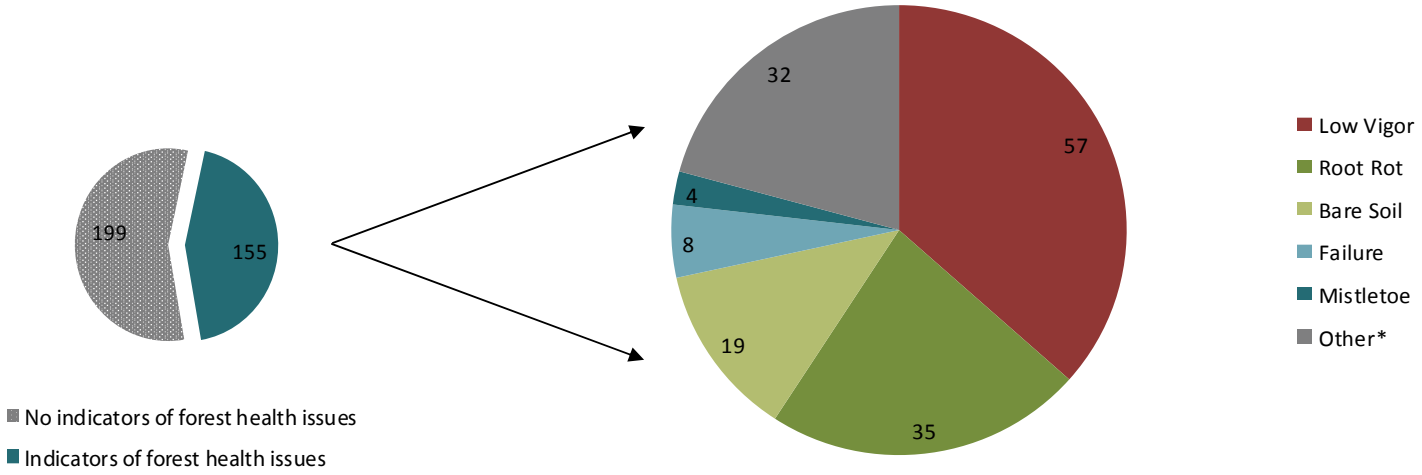


Figure 8. Indicators of forest health issues by total HMU acres

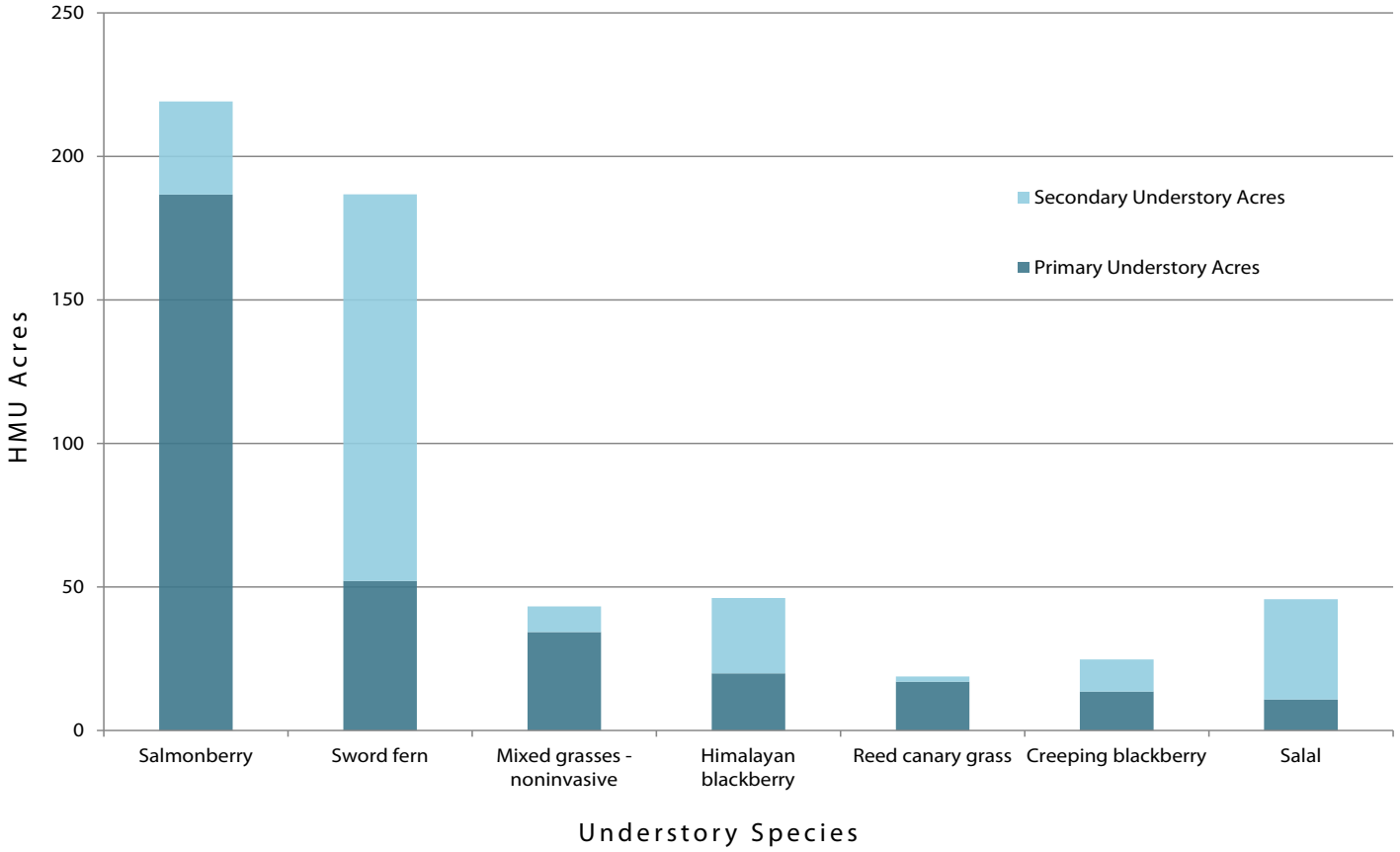


** Other includes additional tree diseases such as butt rot or severe wind throw due to unstable slopes, etc.*

Understory Species

Everett's forested parklands have a moderately healthy understory consisting of native shrubs and ferns (see Figure 9). Salmonberry, sword fern, and salal dominate the understory of the forested parks. However, invasive blackberry, reed canary grass and mixed noninvasive grasses were also present as primary and secondary understory species.

Figure 9. Most common understory species by total HMU acres

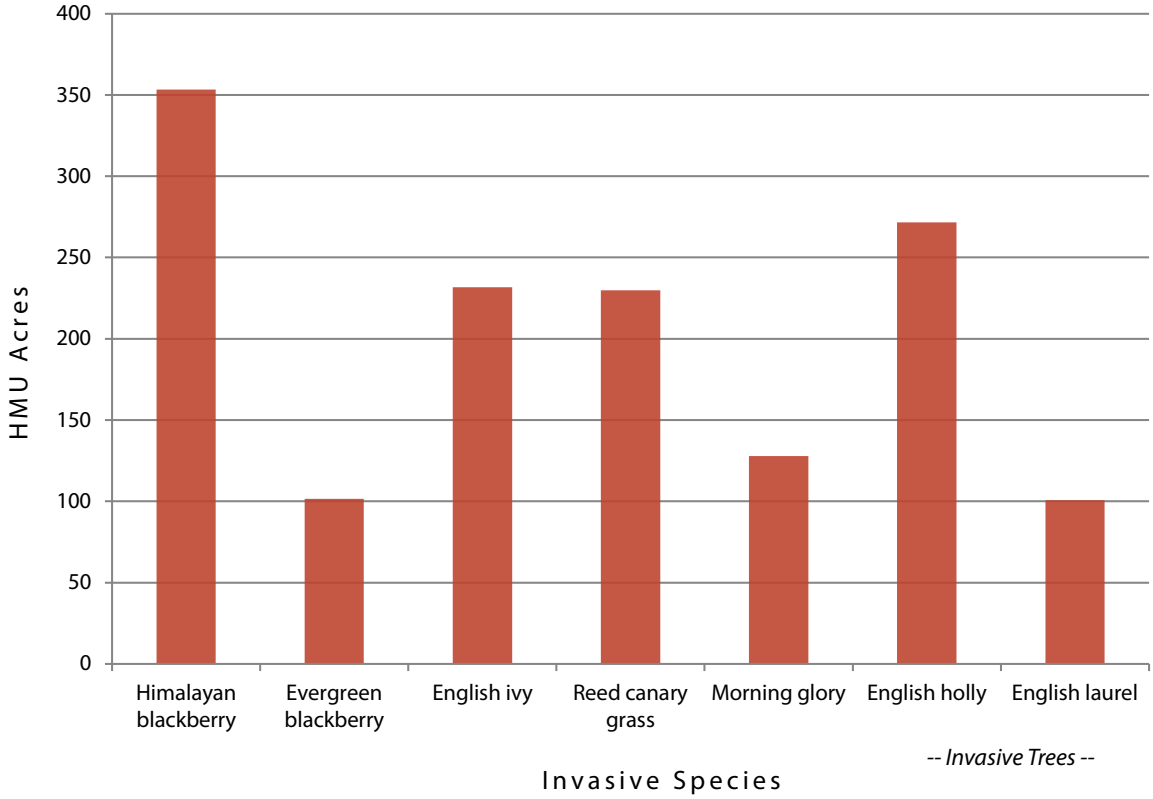


Invasive Species

Currently, native plants are the most common primary and secondary understory species per HMU. However, invasive species are ubiquitous throughout all HMUs. The top five most prevalent invasive species were documented across all HMUs (see Figure 10). For example, Himalayan blackberry is present in every HMU in the project area. In fact, 91% of the project area has invasive blackberry as the first or second most prevalent invasive species. Although English holly is not ranked as a primary invasive, it is present in 77% of the HMUs. English ivy and reed canary grass are at 65% and 64%, respectively. For a list of the most common invasive species present per HMU acre documented in the assessment, see Appendix F.

During the plan's 20 years, the Green Everett Partnership will monitor and periodically collect restoration site data to evaluate changes in acreage among the tree-iage categories. Individual sites will receive more-detailed analysis to address their needs as restoration continues. See Appendix C for site-specific descriptions of conditions in each park.

Figure 10. Most common invasive species by total HMU acres



Field Objective 2: Prioritize Parks

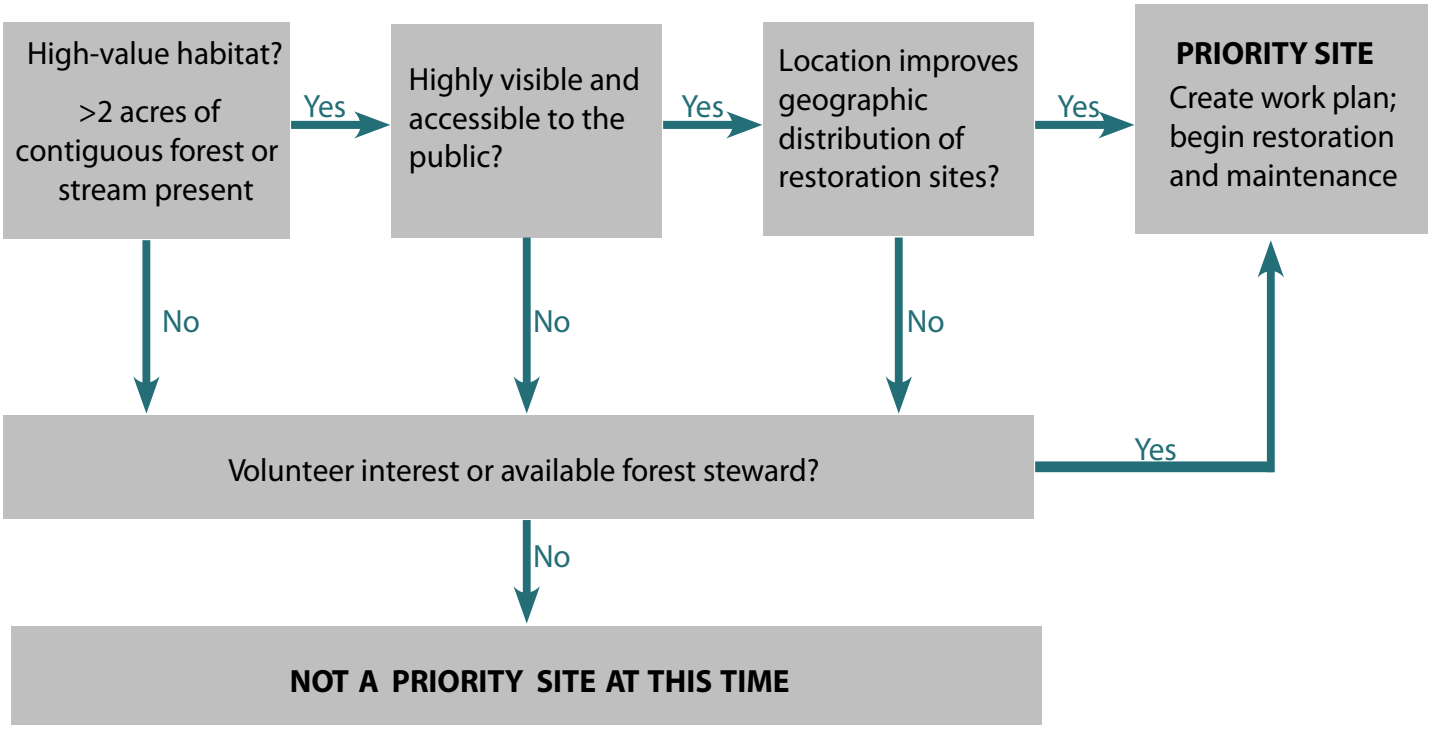
Tree-iage analysis results show that there are 354 acres of forested Everett parklands in need of various levels of restoration and maintenance. There are 23 parks included in the tree-iage analysis, and some parks contain as many as three different tree-iage categories, each with different needs. To maximize resources, the Green Everett Partnership must prioritize restoration efforts based on the needs of both the forest and the community. Prioritization is also important to help ensure that restoration efforts are distributed equitably throughout the city.

In May 2012, Howarth and Thornton A. Sullivan Parks were identified as priority parks to launch the Green Everett Partnership. To help inform how future restoration efforts are prioritized, the Partnership collected feedback from a public meeting and online survey held in the fall of 2012. The results were consistent with those from other similar-size Green Cities such as Kent, Redmond, and Kirkland. Highest values were given to parks that provide important habitat, are highly visible to the public, and where there is an existing or interested forest steward or community group. The most popular activities that survey participants enjoyed in forested parks are walking, hiking, and viewing birds, trees, and nature in general (see Appendix I for the public input summary). These results are consistent with findings from the Everett Parks Department strategic plan outreach efforts in 2005/06. Based on this information, during its first five years (2013–2017), the Partnership will use the decision tree in Figure 11 to determine which parks will be a priority for restoration.

Field Objective 3: Prioritize Restoration Sites within Parks

As individual parks are enrolled into active management through the Green Everett Partnership, forest stands within those parks should be prioritized for annual and five-year restoration plans. The tree-iage model can be applied within a park to help prioritize restoration sites. Conifer stands with few to no invasive plants (tree-iage category 1) are typically enrolled into ongoing monitoring and maintenance as quickly as possible. Other high-value forest stands, including conifer-dominated tree-iage categories 2 and 3, are typically considered high priorities for protection and restoration. Other factors, such as the presence of wetlands, streams, or shorelines, are also taken into consideration. Providing maintenance for recently restored sites is a priority as well. As resources become available, work can be done on other tree-iage categories to establish conifers or other desired canopy types. Parks with current restoration in progress are con-

Figure 11. Decision tree for prioritizing restoration sites



sidered active Green Everett Partnership sites and will have priority support and monitoring by staff. In order to enroll all 354 acres of forested parkland into active management and maintenance by 2032, annual acreage goals for fieldwork have been established.

In the first year, as community outreach and resource marshaling is emphasized, a strong base of active sites is planned, with a goal of enrolling 2 new acres in 2013. Then the program is designed to gradually increase acreage to a peak goal of 30 acres in restoration per year while continuing restoration, maintenance, and monitoring on 55 acres in 2019. This supports the target goal of enrolling all 354 acres of forested parks into active management in 20 years.

In 2017, the park and site selection processes should be reviewed to help ensure that project and community goals are being met. Parks for the following five years (2018–2022) of project implementation will then be selected.

Field Objective 4: Restoration Implementation

Best management practices (BMPs) for restoration are considered the most effective methods to maximize ecological benefits by creating a high-quality, high-functioning forest at the end of the 20-year program. The Green Everett Partnership will use the same four-phase approach that has been used successfully in the other Green City Partnerships.

BMPs

As more restoration projects are completed in urban environments, more is learned about what does and does not work. These projects will help inform and guide BMPs for Everett's fieldwork. These BMPs include site planning, invasive control methods, planting and plant establishment, and volunteer management. Field experience and best available science will help improve techniques now and in the future. BMPs will be updated as needed.

The Green Seattle Partnership created a *Forest Steward Field Guide* (Forterra and Seattle Parks and Recreation, 2012) of BMPs suitable for volunteer work. The Green Everett Partnership has adapted this field guide for Everett's Forest Steward Program. Program staff and volunteer forest stewards will be trained in the BMPs. Supplemental course work and training programs will be recommended for all staff involved in active management of Everett's forested parklands.

Four-phase approach to restoration fieldwork

An important BMP, developed by the Green Seattle Partnership, is the four-phase approach to restoration fieldwork, which has been highly successful. It recognizes that restoration activities fall into four major phases, and that, at some sites, it takes several years to move through these phases:

1. Invasive plant removal
2. Secondary invasive removal and planting
3. Plant establishment
4. Long-term monitoring and maintenance

Because forest health varies from stand to stand, and some work is ongoing, not every site will start at phase 1. Each site, however, will need to receive an on-the-ground assessment before work is begun in the appropriate phase. The four-phase approach also provides ranges of labor investment needed to accomplish each phase, allowing for estimates of cost and time per acre (see Table 7).

Phase 1. Invasive plant removal

The first phase aims to clear the site of invasive plants, focusing on small areas at a time in order to help ensure thoroughness and minimize regrowth. Specific removal techniques will vary by species, and it may take more than a year to complete the initial removal.

Major invasive plant reduction will be required on sites with 50% or greater invasive cover (high threat from invasive species: tree-iage categories 3, 6, and 9). Many of these areas will require skilled field crews or special equipment. Given the extent of invasive cover, these sites will also require a large investment of both funding and community volunteers to help ensure restoration. Areas with 5% to 50% invasive cover (medium threat from invasive species: tree-iage categories 2, 5, and 8) will also require invasive removal. Invasive growth in these spots is patchy. Generally, projects in these sites are

appropriate for community volunteers. Areas with 5% invasive cover or less (low threat from invasive species: tree-iage categories 1, 4, and 7) require little or no removal, and phase 1 work in these areas may simply involve walking through to check that any small invasive growth is caught before it becomes a larger problem.

Phase 2. Secondary invasive removal and planting

Before planting, a second round of invasive removal is done to target any regrowth before it spreads, and to clear the site for young native plants to be established. Staff will work with each site on a case-by-case basis to develop an appropriate plant palette and work plan.

Areas with more than 50% conifer canopy cover (tree-iage categories 1, 2, and 3) will require the least amount of planting, but may need to be filled in with ground cover, shrubs, and small trees in the understory. Areas with more than 25% native tree cover but less than 50% conifer cover (tree-iage categories 4, 5, and 6) will generally be filled in with native conifer species. Areas with less than 25% native tree canopy cover (tree-iage categories 7, 8, and 9) will require extensive planting with native trees, shrubs, and ground cover. Most phase 2 planting projects are appropriate for community volunteers. The *Forest Steward Field Guide* provides volunteer-appropriate BMPs once a planting plan has been established.

Phase 3. Plant establishment

This phase repeats invasive plant removal and includes weeding, mulching, and watering newly planted natives until they are sufficiently established on their own. Most plants require at least three years of establishment care to help ensure their survival. Although native plants have adapted to the area's dry summer climate, installed container and transplanted plants both experience shock, which affects root and shoot health. Sites may stay in phase 3 for up to three years.

Phase 4. Long-term monitoring and maintenance

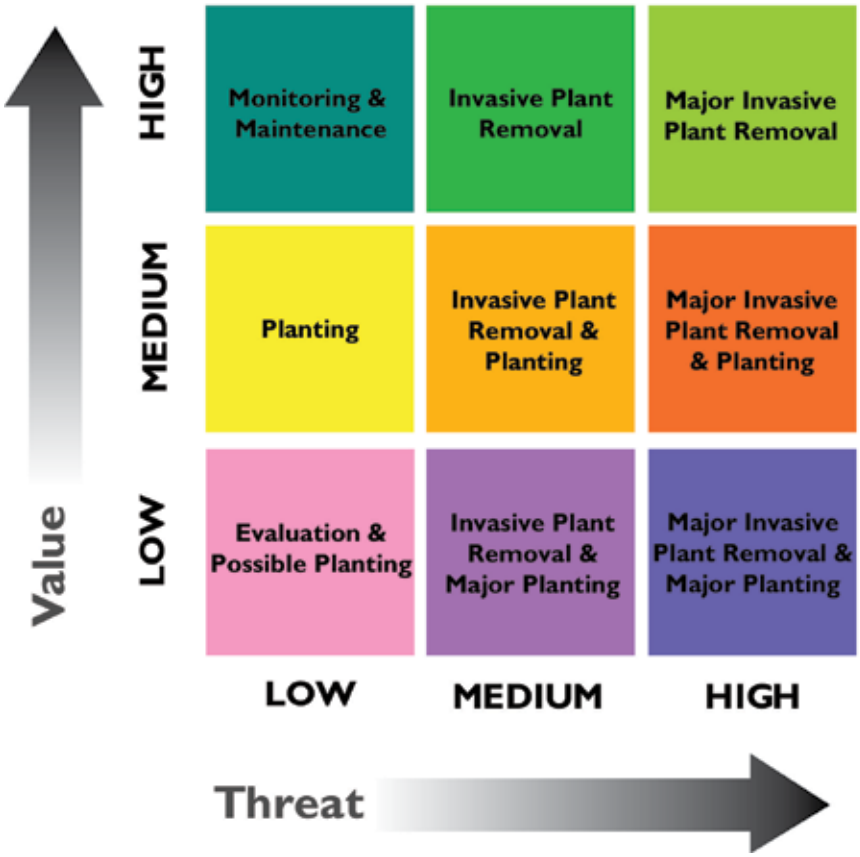
The final phase is long-term site stewardship, including monitoring by volunteers and professionals to provide information for ongoing site maintenance. Monitoring may be as simple as neighborhood volunteers patrolling park trails to find invasive species, or it could involve regular measuring and documentation of various site characteristics. Maintenance will typically consist of spot-removal of invasive regrowth and occasional planting where survivorship of existing plants may be low. Individuals or small quarterly or annual work parties can easily take care of any needs that come up, as long as they are addressed promptly before problems spread. The number of acres in phase 4 is programmed to grow every year, with the goal that all 354 acres will be enrolled in the restoration process and graduate to phase 4.

Without ongoing, long-term volunteer investment in monitoring and maintenance of areas in restoration, Everett's natural areas will fall back into neglect. For that reason, volunteer commitment needs to be paired with city resources. Work is then compared against the best available science to

Table 7. The 4-phase approach to restoration fieldwork

Phase	Tasks	Range of Labor Investment (hours/acre)	Estimated Volunteer Match Required (hours/acre)
1	Invasive plant removal	50 - 1,400	700
2	Planting and secondary invasive removal	50 - 200/year for up to 3 years	100
3	Plant establishment	25 - 100/year for up to 3 years	40
4	Long-term monitoring and maintenance	0 - 20 annually	5

Figure 12. Restoration strategies and tree-iage categories



define optimal plant stock and sizes, watering regimes, soil preparation, and other forest and natural-area management techniques. Monitoring will be conducted more frequently in the early phases of the program as the Partnership discovers how the sites respond to restoration. Natural area stands that currently have less than 5% invasive cover and more than 50% native conifer forest cover or healthy forested wetland vegetation (tree-iage category 1) may already be in phase 4 and suitable to be enrolled directly into a monitoring and maintenance plan. Others may need some preliminary restoration in phases 1 through 3.

In 2012, the Green Cities program developed a Regional Standardized Monitoring Program in order to understand the success, value, and effectiveness of restoration activities throughout the Partnerships. These protocols provide baseline and long-term data collection procedures that can be replicated in the future to measure changes in site characteristics. The recorded information can be used to show the composition and structure of a site, which can be an important indicator of overall forest health. As the Green Everett Partnership grows its program, monitoring protocols and training will be made available as restoration efforts progress.

Application to the Tree-iage Categories

The four-phase approach can be applied to the tree-iage categories as shown in Figure 12. Each tree-iage category can be assigned appropriate management strategies. The Partnership will evaluate areas of low coverage and low threat on a case-by-case basis to determine if it is appropriate to convert the sites to native forest. In areas where site conditions and timing are appropriate, major plantings will occur.

Tree-iage Category 1:

High Tree Composition, Low Invasive Threat

Acres in project area: 8

Condition: This category contains the healthiest forest areas in the Everett park system. Typical stands have more than 50% evergreen canopy. This category includes stands of mature Douglas-fir, western hemlock, western redcedar, and forested wetlands. In wetland areas, this category has full cover by native vegetation appropriate to the site, where full conifer coverage would not be appropriate. These stands are under low threat because the invasive cover is less than 5%.

Management Strategy: Monitoring and Maintenance

Work is focused on protecting these areas' existing high quality and making sure that invasive plants do not establish themselves.

Tree-iage Category 2:

High Tree Composition, Medium Invasive Threat

Acres in project area: 71

Condition: Similar to category 1, these forest stands contain more than 50% conifer or evergreen broadleaf canopy or appropriate native wetland vegetation. Forests in this category are at risk because the invasive cover is greater than 5% but less than 50%. In these areas, invasive growth is expected to be patchy with diffuse edges.

A forest in otherwise good condition but subject to a number of moderate threats may degrade if left untreated. If unattended, this level of invasive coverage could prevent native seedlings from establishing and could compete with existing trees for water and nutrients. However, the forest would persist in good condition if threats were mitigated in a timely manner.

Management Strategy: Invasive Plant Removal and Prompt Action

The main activity is removing invasive plants. Typically, these sites will also require site preparation (e.g., mulching) and infill planting. Projects in these areas are appropriate for volunteers. Removing invasive plants from these areas is a very high priority for the first five years.

Tree-iage Category 3:

High Tree Composition, High Invasive Threat

Acres in project area: 30

Condition: As in categories 1 and 2, forest stands in this category have mature conifers, madrones, forested wetlands, or wetland vegetation where appropriate. Category 3 areas have a high threat from greater than 50% invasive cover.

A forest in this category is in a high-risk situation and contains many desirable trees or highly valuable habitat or species. If restored, forests in this category can completely recover and persist in the long term.

Management Strategy: Major Invasive Plant Removal

Without prompt action, high-quality forest stands could be lost. Category 3 areas require aggressive invasive removal. Soil amendments and replanting are needed in most cases. Restoration efforts in this category are a top priority for the first five years.

Tree-iage Category 4:

Medium Tree Composition, Low Invasive Threat

Acres in project area: 27

Condition: Forests assigned a medium tree composition value are typically dominated by native deciduous trees but have at least 25% native tree cover. Between 1% and 50% of the canopy is made up of native conifers. In wetland areas not suitable for conifers, these areas have between 1% and 50% cover by appropriate wetland vegetation. Category 4 areas have low levels of invasive plants covering less than 5% of the HMU.

Management Strategy: Planting and Monitoring

We expect planting in these areas to consist of infilling with native species and establishing conifers to be recruited into the next generation of canopy. Often these sites require some invasive removal and site preparation (e.g., amending with woodchip mulch). Many of these sites may be converted to a conifer forest by the addition of appropriate conifer trees.

Addressing category 4 forests is a high priority during the first five years. They offer a high likelihood of success at a minimum investment. These sites are well suited to community-led restoration efforts.

Tree-iage Category 5:

Medium Tree Composition, Medium Invasive Threat

Acres in project area: 153

Condition: Areas in this category have greater than 5% but less than 50% invasive cover. Invasive growth in these areas is expected to be patchy with diffuse edges. These areas are estimated to have greater than 25% native upper canopy cover but less than 50% upper canopy coniferous or broadleaf cover. In the case of wetland forests, it is greater than 50% native tree canopy cover. In wetland areas not suitable for conifers, these areas have between 1% and 50% cover by appropriate wetland species. These forest stands contain many desirable native trees that are under threat from invasive plants.

Management Strategy:

Invasive Plant Removal and Planting

These sites will require invasive removal and infill planting. While some restoration work is planned for these areas in the first five years, aggressive efforts are required throughout the life of the Green Everett Partnership.

Tree-iage Category 6:

Medium Tree Composition, High Invasive Threat

Acres in project area: 33

Condition: These areas are typically dominated by native deciduous trees but have at least 25% native tree cover. Between 1% and 50% of the canopy is made up of native conifers. In wetland areas not suitable for conifers, these areas have between 1% and 50% cover by appropriate wetland vegetation. Invasive plants cover more than 50% of the HMU.

A forest that retains important plant elements but is already partially degraded by a high-level risk factor may still have the potential to recover if remediation is prompt. Because these stands are at greater risk than category 5 forests, they also require greater labor investment.

Management Strategy:

Major Invasive Plant Removal and Planting

Extensive invasive removal, site preparation (e.g., amending with woodchip mulch), and replanting are required. Initial invasive removal may be done with the aid of mechanical tools and equipment and may require professionals. Planting in these areas consists of infilling with native species.

Tree-iage Category 7:

Low Tree Composition, Low Invasive Threat

There are no acres in this category.

Condition: These forests are estimated to have less than 25% native canopy cover in a setting that could support full canopy cover under good conditions. Forested wetlands will have less than 25% trees or shrubs appropriate to the site. Levels of invasive plants are low in category 7. Parks in this category may include areas with large canopy gaps (perhaps due to wind throw or die-off of mature deciduous trees), sites of recent landslides, unstable slopes, sites with large amounts of fill, and/or areas dominated by nonnative trees.

Management Strategy: Evaluation and Possibly Planting

The reasons underlying these sites' low value can differ greatly, and the stands will be addressed on a case-by-case basis. Because of low levels of invasive plants, restoration may be quite cost-effective in some of the category 7 forests. Sites will be evaluated to determine whether conditions and timing are appropriate to move these areas toward a more native forest and what the appropriate composition of that forest should be. In some cases, it may be desirable to remove non-native trees, especially if they are aggressive. Areas that are ready for conversion to native forest would be a high priority during the first five years.

Tree-iage Category 8:

Low Tree Composition, Medium Invasive Threat

Acres in project area: 8

Condition: Areas that are estimated to have less than 25% native upper tree canopy cover or forested wetlands with less than 25% cover by trees and 5% to 50% invasive cover fall into this category. Invasive growth in these areas is likely to be patchy with diffuse edges. A forest in this category might be chronically degraded by a variety of threatening processes, and might have lost much of its value in terms of habitat quality or species complement.

Management Strategy: Invasive Plant Removal and Major Planting

Restoration efforts in these areas require a large investment of time and resources. Although some work will be directed here, this is not a priority category for the first five years. The Partnership will support efforts that contain the spread of invasive plants, try out new techniques, or help enthusiastic community-led efforts. These sites will require major invasive removal and site preparation, such as mulching and infill planting. Planting within these areas will consist of infilling with native species.

Tree-iage Category 9:

Low Tree Composition, High Invasive Threat

Acres in project area: 24

Condition: Areas estimated to have less than 25% native upper tree canopy cover or appropriate forested wetland vegetation and greater than 50% invasive cover fall into this category.

Management Strategy:

Major Invasive Plant Removal and Major Planting

Category 9 sites are not likely to get much worse during the next five years. These sites require many years of major invasive removal and site preparation in the form of mulching and infill planting, and will almost definitely require the attention of professionals. Although work will be directed to category 9 forests in the future, this is not a priority category for the first five years. The Partnership will support efforts that contain the spread of invasive plants, try out new techniques, or bolster enthusiastic community-led efforts.

Community

Community volunteers are an essential component of lasting success in any stewardship program. Volunteers are the Partnership's loudspeakers, newsletters, fund-raisers, and motivators. They are the advocates for resources and funding. They do much of the physical restoration work, and field efforts rely on them in order to achieve program goals. The Green Everett Partnership will work to educate, engage, and motivate the community to create an involved and supportive constituency.

Prior to creating this plan, public feedback was collected from the Everett Tree Committee and residents via a public open house and online survey. The feedback (along with lessons learned from other Green Cities Partnerships) was used to shape Green Everett Partnership annual plans and goals.

The community program area includes the following objectives:

1. Develop and implement a community outreach and education plan
2. Identify and engage diverse community groups
3. Expand the Green Everett Forest Steward Program
4. Demonstrate appreciation for volunteers and seek their input
5. Encourage businesses to contribute to program goals
6. Work to engage and educate private landowners

Community Objective 1: Develop and implement a community outreach and education plan

For the public

Outreach materials will be developed to help spread the word about the Green Everett Partnership's vision and goals and explain how to get involved. The materials should highlight the benefits of forested parks, the current state of Everett's urban forests, the problem, and the solutions outlined in the 20-year plan. These materials must inspire both community participation and confidence in the Partnership's restoration plan. They are produced under the oversight and with the approval of the city.

The starting point is to create a simple message that is appealing and motivating, and considers the needs of all potential participants and partners (homeowners, local agencies, schools, businesses, and community organizations). The Partnership has already initiated this process: a logo, a dedicated page on the Everett Parks website, *Forest Steward Field*

Guide, recruitment flyer, contact e-mail and phone number, and PowerPoint presentation are already actively in use. Additional materials may include a brochure, poster, banners, A-frame event signs, restoration site H-stake signs, training and education materials, and an outreach kit. The Partnership will need to continually develop new cost-effective ways to reach audiences, including having a comprehensive online presence. Social media will continue to play (as it does today) a significant role in promoting the Partnership and in volunteer recruitment; Green Everett Partnership currently utilizes Everett Parks and Recreation's website and Facebook page and Forterra's Facebook page and Twitter feed for promotions. In the future, as the program grows and budget and capacity allow, the Partnership may evaluate if Green Everett should have an independent website and social media outlets.

For the media

The Green Everett Partnership will engage the media to help achieve program goals. Various media outlets can be utilized to publicize volunteer events or new information on the Partnership's progress. Some local media outlets include Everett newspapers the *Herald* and *Tribune*, neighborhood association newsletters, citywide publications such as the Everett Parks and Recreation quarterly guide and e-newsletter, and local television programming such as Everett TV. The Green Everett Partnership webpage will provide additional information about the program's management techniques, volunteer events, problems with invasive plants, and the benefits of trees and native plants.

As people learn of the challenge facing Everett's forests, a clear message will be given that the solution requires a significant investment of both volunteer time and resources. Increased public interest in forest restoration can have the beneficial effect of helping raise private dollars as a match to public funding for ongoing restoration and maintenance.

Community Objective 2: Identify and engage diverse community groups

In recent years, several different groups have volunteered with Everett Parks and Recreation in some capacity. Through business volunteer days, neighborhood associations, faith-based organizations, youth groups, community service groups, school service-learning credits, and individual service hours, the Green Everett Partnership will continue to engage the community in park restoration. The Partnership will also work to reach new groups of volunteers in order to expand the program.

Activities available to the Partnership to foster engagement include the following:

- Organize, advertise, and host work parties.
- Promote Forest Steward Program which encourages community members or groups to adopt a local forested park.
- Host outreach booths at public events.
- Post informational signs in local parks and natural areas where restoration and maintenance are occurring.
- Meet with community groups, businesses, homeowners' associations, civic organizations, schools, youth groups, and nonprofits to educate them about the Partnership and seek volunteer support.
- Build upon popular existing events such as Arbor Day, Earth Day celebrations, and Day of Caring to attract local employers and large groups of volunteers.
- Use online networking (e.g., Facebook, Twitter, Meetup.com) to reach out to individuals or groups with outdoor or stewardship interests, and to publicize upcoming restoration events and the Partnership's approach to restoration.
- Work with teachers to organize field-trip opportunities with hands-on outdoor stewardship educational activities. Support these relationships and encourage participating students to volunteer in parks and natural areas with their families.
- Inform schools about service-learning potential for students.

Community Objective 3: Expand the Green Everett Forest Steward Program

The intent of the Forest Steward Program is to build a legacy of volunteer-driven restoration, maintenance, and stewardship around natural areas. This program is designed to provide regular volunteers with additional opportunities and challenges, as well as resource support on a multiyear timescale. The Partnership launched the Forest Steward Program in 2012 and now has six forest stewards at Thornton A. Sullivan Park, Howarth Park, and the newly acquired Madison/Morgan parcel (the park is yet to be officially named). In the first five years, it is expected that 30 active volunteer forest stewards will be trained and supported in forest restoration best management practices, volunteer management and motivation, and reporting. These forest stewards will direct other volunteers in the field and act as leaders in their communities. Forest stewards will garner support for their local forests and natural areas. The Partnership will support them with staff time, resources, and guidance in site planning and restoration work.

Forest stewards will be given the opportunity to do the following:

- Attend regular training events as resources allow.
- Serve as key contacts for the Green Everett Partnership projects in their park.
- Organize and lead volunteer events and activities in their park.
- Coordinate with staff to develop site restoration plans.
- Request tools, materials, and assistance as needed.
- Track and report progress on restoration activities via the Partnership's work log.

Reaching out to the area's existing volunteer network with Everett Parks and Recreation to recruit forest stewards is a top priority, as is reaching out to neighborhood associations, existing nonprofit organizations such as United Way of Snohomish County and Washington Native Plant Society, and local community groups. The Partnership will also recruit from a growing list of volunteers who attend the Partnership's work parties.

Community Objective 4: Demonstrate appreciation for volunteers and seek their input

The Green Everett Partnership will work to sustain and retain existing volunteers and recruit new ones by recognizing volunteers' accomplishments and seeking their feedback to improve the program.

The Partnership will celebrate volunteers' achievements and emphasize the crucial role they play in restoring Everett's natural areas in several ways. Recognition of outstanding efforts and service will be published on the Green Everett webpage and submitted for publication in local media. Each volunteer, if desired, will also become a Forterra volunteer, which entitles them to invitations to special events, stewardship work parties, member hikes, and tours of conserved lands, as well as a subscription to Forterra's newsletter, providing information on conservation and stewardship projects throughout the region.

The Partnership will host an annual recognition event for forest stewards. This can be a great way for staff and forest stewards to get to know each other and share experiences. Volunteers are a valuable source of on-the-ground expertise. Consistent with the Partnership's adaptive management approach, volunteers will be asked to provide input to help steer annual work plans and goals. The Partnership will also seek their advice on which best management practices work well and which may need reassessment.

Community Objective 5: Encourage businesses to contribute to program goals

Business contributions to the Green Everett Partnership can include:

- Employee participation in Partnership events
- Cash donations
- Opportunities to sponsor volunteer events
- In-kind contributions (such as equipment, native plants, materials, and food for volunteer events)
- Refraining from planting or selling invasive plants

The Partnership will seek business participation. The recruitment of corporate sponsors to hold employee stewardship events at Green Everett Partnership sites is an important element for program success. In some cases, corporate sponsors may also be in a position to contribute supplies and materials necessary for stewardship events. In turn, the Partnership can offer incentives such as special recognition and publicity for supporting the Partnership.

Landscape supply businesses will be encouraged to adjust the mix of plants they sell based on the "Weeds of Concern" list authored by the Snohomish County Noxious Weed Control Board. The Partnership will provide education on invasive plants and suitable alternatives and seek opportunities to convey the Partnership message at local garden fairs and clubs.

Community Objective 6: Work to engage and educate private landowners

While stewardship on public lands is an important step toward increasing canopy cover, protecting habitat for wildlife, improving water quality, and providing public recreation opportunities, private lands cover a greater portion of Everett. Activities that occur on these private lands can greatly degrade the condition of the city's public natural areas despite the best efforts to care for them. For instance, English ivy growing as a border plant in a landowner's backyard can quickly escape into a park either by spreading beyond the property line or by birds dispersing its seeds. Many invasive species also spread when yard waste is illegally dumped in parks. In fact, these are the common ways in which natural areas become infested with invasive species.

Alternatively, landowners can be a great resource for their neighborhood parks by engaging their neighbors, schools, community groups, clubs, and businesses to help the cause. In addition, private land can also be a main source for retaining tree canopy and expanding current natural areas. Privately owned natural areas in good health can serve as important buffers to adjacent public parkland and mitigate edge effects.

Potential ways for the Green Everett Partnership to educate and engage private landowners as an important constituency include:

- Develop mailings and handouts to inform residents about the problems facing natural areas, the solution offered through the Partnership, the benefits of removing invasive species from their properties (in addition to the parks) and replacing them with native or noninvasive ornamental species, and how they can get involved.
- Provide information about active forest management and the Green Everett Partnership on the city website, Partnership webpage, in park kiosks, and in neighborhood newsletters and local newspapers.
- Connect private landowners with programs such as the National Wildlife Federation's Backyard Wildlife Habitat Program or Schoolyard Project to develop a community restoration or maintenance program.
- Train landowners in best management practices through the Forest Steward Program.
- Create and promote a forest-friendly plant list for developers and landowners that discourages invasive species and encourages native or noninvasive species and tree retention.

Resources

Funding, staff, and volunteer resources will define the extent to which the Green Everett Partnership can restore all of Everett's 354 acres of forested parklands. In addition to volunteer support, it is estimated that a public sector cost of approximately $6.5 million in 2012 (constant) dollars is needed to accomplish the goals of the Partnership.

This public funding is anticipated to be matched by in-kind support from volunteers, which is expected to leverage close to $4.9 million in value (2012 dollars) during the 20 years of the program. Depending on public resources, corporate partners, foundations, and private donors may also play an important role in funding.

The Partnership anticipates reaching close to 16,000 volunteer hours per year in 2019, when the peak of projected new-acre enrollment is reached, and 19,000 volunteer hours in 2027, when the largest volume of acres in various phases of restoration is projected to be managed. Volunteer work may range from a single, dedicated individual to a neighborhood group, large community group, or business. Volunteer efforts will be essential to accomplishing work objectives and building citywide community support. At the end of the 20 years, a growing contribution of time from volunteers will be integral to the monitoring and maintenance of all 354 acres and will require continued support from the city and its partners.

To support and maintain this level of volunteer and field needs, additional resources will need to be allocated to the functions of volunteer recruitment, coordination, training, and recognition. The ability to provide additional resources will help keep volunteer productivity high and help ensure positive forestry stewardship experiences.

The resources program area comprises the following eight objectives:

1. Estimate total program costs
2. Continue current city funding
3. Develop long-term funding
4. Review and update current programs and policies to improve stewardship
5. Provide sufficient staff to support fieldwork, volunteer management, and Partnership programs
6. Deploy skilled field crews as appropriate
7. Increase volunteer engagement to a cumulative total of 225,000 hours during the program's 20 years
8. Increase productivity by providing support and materials to volunteers

Table 8. Estimated cost of restoration (in 2012 dollars) per tree-iage category

Tree-iage Category	Acreage	Average Restoration Costs/Acre	Total Cost per Tree-iage Category
1	8	$8,200	$65,600
2	71	$14,500	$1,029,500
3	30	$18,800	$564,000
4	27	$13,800	$372,600
5	153	$18,600	$2,845,800
6	33	$22,900	$ 755,700
7	0	$17,500	$0
8	8	$25,900	$207,200
9	24	$30,200	$724,800
Total	354		$6,565,200

Resources Objective 1: Estimate total program costs

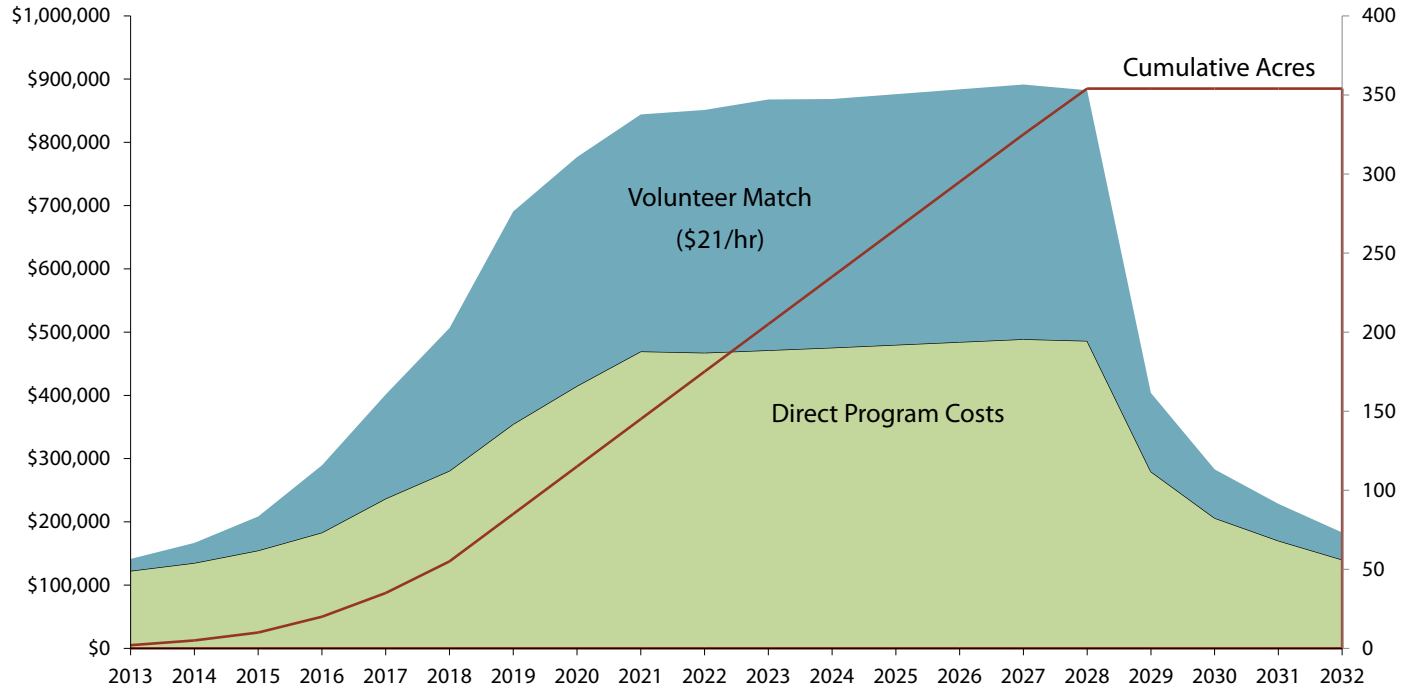
In 2005, the Green Seattle Partnership estimated the costs of restoring 2,500 acres of forested parkland for a 20-year period. It relied on estimates of past costs for removing invasive species, replanting, and ongoing maintenance, and estimates for staff needs and costs associated with additional fieldwork, materials, planning, program design and management, funding development, outreach and marketing, and field and office overhead.

For the Green Everett Partnership, this plan's cost model began with the Green Seattle Partnership's original estimates (inflated to 2012 dollars), adjusted to reflect Everett's current staff level and funding capacity, in addition to current costs associated with restoration-related activities. Given that Everett's park system is smaller than Seattle's, the Green Everett Partnership will require lower overall field costs, fewer staff, and lower overhead than the Green Seattle Partnership. For this plan, all cost estimates and leverage volunteer values are listed in 2012 dollars.

Using a cost model that enrolls a percentage of acres from each tree-iage category each year during 20 years, the average costs per acre going through the four phases of restoration and ongoing maintenance can be calculated (see Table 8). For the Green Everett Partnership, the model estimates that enrolling all 354 acres in active management will cost from $8,200 per acre for tree-iage category 1 acres to $30,200 per acre for tree-iage category 9 acres. This estimate includes projected program and administrative staff plus field supplies and support, with a built-in 15% overhead on field expenses and 7% overhead on staff time. These costs per tree-iage category are specific for Everett and the length of the program; they will need to be adjusted for use in other areas and program durations.

The cost per acre for each tree-iage category is the total estimated cost from the time it is enrolled until the end of the plan in 2032. For example, the model projects enrolling 2 new acres in 2013, with a combined first-year program cost of $122,000 for staff, field expenses, and overhead needed to recruit and support an estimated 890 volunteer hours. The average cost per acre in the first year is higher than in subsequent years due to a higher investment of staff time to set up the program and recruit volunteers; the average annual cost per acre will decrease as the program becomes established and takes on more acres. The cost model accounts for the 2 acres enrolled in 2013 with subsequent planting, plant establishment, and maintenance during the full 20 years. As more new acres are added each year, the cost model accounts for various phases and maintenance of the total accumulation of acres enrolled. By 2023, the model estimates that the Partnership would enroll 30 new acres while maintaining 205 previously enrolled acres with an estimated annual cost of $470,000.

Figure 13. 20-year funding projections and cumulative acres enrolled per year



Based on the adjusted estimates, the model forecasts that it will cost approximately $6.5 million in 2012 dollars to implement the Green Everett Partnership through 2032. Although the total is a high number, the cost of effectively managing these lands solely using commercial crews would be far more expensive — and would not ensure long-term success or community ownership (Figure 13).

Resources Objective 2: Continue current city funding

During the program's first five years, the cost model projects that it would have an estimated annual cost of $122,000 in 2013 and ramp up to $240,000 in 2017. Park Operations is responsible for managing a variety of maintenance programs that support a high-quality, diverse park system. These programs are funded through the general fund. At this time, a portion of the general parks division operation budget will continue to be dedicated to supporting activities defined by the Green Everett Partnership. Additional funding sources to help reach the targeted 354 acres will need to be secured.

Resources Objective 3: Develop long-term funding

Current funding levels will not be sufficient to restore and maintain the targeted 354 acres of forested parks in Everett. In 2012 Forterra received a grant from Boeing to help jump-start the Green Everett Partnership and develop the 20-year plan; this grant is currently scheduled to run through the end of 2013. In addition to current funding sources, the Green Everett Partnership is committed to seeking other funding to meet program goals. An active, informed, and engaged group of stakeholders will need to work to identify and pursue various opportunities.

To meet program goals, the cost model for the Green Everett Partnership forecasts a need to increase resource allocation from approximately $122,000/year in 2013 to approximately $490,000/year in 2027, when the largest volume of high-cost acres are being enrolled in the program (see Figure 13). Beginning in 2029, costs are anticipated to decrease to an average of $280,000/year through the end of the program, leveling out at around $140,000/year to support the ongoing maintenance and monitoring of all 354 acres. During the next few years, the groundwork will be created for establish-

ing long-term funding sources to help meet this need. Several possible funding mechanisms could be evaluated for consideration, either separately or in combination, to meet the public-funding goal, such as the following:

- Federal, state, and local grants from such entities as Snohomish Conservation District, Washington State Recreation and Conservation Office, and Conservation Futures
- City of Everett departmental funding (reallocated and/or increased)
- Financial nexus establishment between the management of forested parklands as stormwater management infrastructure and for other ecosystem services related to utility infrastructure
- Separate state and federal discretionary funding for forest restoration
- Increased balance of the Parks endowment that would generate enough annual interest to help support the Partnership
- Market-based mechanisms, if determined feasible (carbon credits and stormwater mitigation)
- Other public-funding mechanisms that have supported park improvements in other cities, such as a parks bond (as referenced in the department's strategic plan)
- Contributions from local corporations and businesses
- Financial contributions from the public, if volunteering is not an option

Small donations can be deposited in the checking account of the parks endowment fund. The fund is administered by the Greater Everett Community Foundation.

Resources Objective 4:
Review and update current programs and policies to improve stewardship

Currently, Everett has several programs and policies that could be updated and drawn upon to support the Partnership's goals. The following updates and improvements to existing policies would likely have a positive effect on stewardship and are recommended for further city consideration:

- Allow for Native Growth Protection Easements to foster active landowner management rather than a hands-off approach. This would require training and educating landowners to facilitate engagement and long-term responsible stewardship.
- Develop a recommended plant list for all public properties that includes suitable native understory plants, and excludes all invasive plants.
- Use language from the Everett Comprehensive Plan demonstrating alignment of Partnership and city goals to leverage funding from various sources
- Coordinate restoration, stewardship, outreach, and educational efforts across city departments and programs to maximize volunteers, resources, communication, outreach, education, and funding capacity.
- Explore possible future expansion of the Green Everett Partnership model to other publicly owned forested lands necessary to adequately manage all of Everett's urban forest.

Resources Objective 5:
Provide sufficient staff to support fieldwork, volunteer management, and Partnership programs

Volunteer Management

Currently, volunteers are providing approximately 2,000 hours supporting the type of stewardship work in Everett's natural areas that the Partnership seeks to expand. While these are not all specific forest restoration hours, the number serves as a baseline for similar volunteer activity.

Everett Parks and Recreation does not currently have a dedicated volunteer coordinator position, although it does have one member who spends a dedicated portion of time administering volunteer-related protocols, registration, and tracking. As the Green Everett Partnership approaches its goal of 19,000 volunteer hours at its peak in 2027, experience suggests that at least one full-time employee will need to be dedicated to managing and coordinating restoration volunteer efforts. This position would track volunteer time, recognize volunteer achievements, recruit additional volunteers, and could additionally run the Forest Steward Program, discussed below. Forterra will initially play a major role in

volunteer management, conducting regular volunteer events to help incorporate the experience gained through implementing the other Green City Partnerships. As a structure becomes established, the city can take the lead in volunteer management internally or continue to contract these services with a professional provider.

Forest Steward Program Management and Training

In September 2012, six volunteers from the Everett community stepped forward to adopt local parks and attended an orientation and training program to become forest stewards. The Green Everett Partnership will continue to recruit and train additional volunteers who are interested in a higher level of commitment than attending occasional Parks-led volunteer events. These forest stewards will allow the Partnership to increase community leadership on the ground and therefore its capacity to reach more restoration sites. Forest stewards will lead volunteer events, create work plans, track restoration progress, and apply for small grants to manage their sites. This program will also keep regular volunteers interested by providing a challenging and diverse array of work, and increased ownership of the results.

The success of the Forest Steward Program is dependent upon a staff member being able to coordinate the program, including training new stewards, working with them to develop site plans, coordinating their efforts with other city staff, and keeping track of their accomplishments in relation to Partnership goals. This role could be incorporated into the duties of the volunteer coordinator mentioned above or filled by a different staff member. Park Operations staff will ultimately be responsible for the Forest Steward Program, with help from the Forterra staff to start the program running smoothly.

Outreach and Education

Staff time devoted to education and outreach will be critical in helping increase volunteer capacity to 11,000 hours by 2018 and 19,000 by 2027. Reaching the broader Everett public will require a staff person to devote a portion of time to Green Everett Partnership outreach and education. These efforts will be led by Everett Park and Recreation staff, in collaboration with other city departments when appropriate. Forterra can help fill some of this role during the program's first few years, or longer as needed and if resources allow. Park Operations will also coordinate with the city's Public Information Office to take advantage of outreach opportunities that exist through its publications and products.

Communications and Marketing

Communications and marketing are linked to the duties of volunteer management, outreach and education. This work will be housed within the Parks and Recreation Department. It includes creating and implementing a communications and marketing plan. This will help the Partnership increase visibility and recruit volunteers, as well as increase the potential for generating additional program funding by reaching a wider audience.

Field Restoration

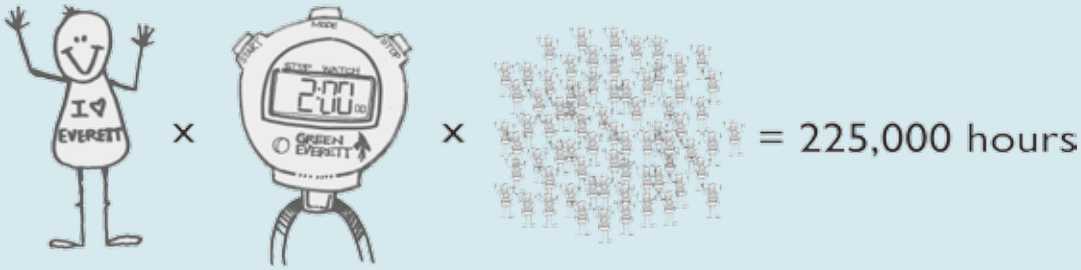
Current Everett staffing alone cannot meet the management needs of restoring and maintaining all 354 acres by 2032. Through the Green Everett Partnership, volunteer labor and community leadership will play a major role in filling the gap. Everett Parks and Recreation Horticulture and Forestry staff will continue to play a lead role in evaluating and managing Everett's forested parklands, especially as more volunteers are brought in to help restoration work. Besides these staff members, Parks and Recreation will likely contract with skilled field crews for some fieldwork on sites that are not appropriate for volunteers. In the first couple of years, training in restoration best management practice and volunteer management will help ensure that all staff are up to speed with the same techniques and approach that are being taught to forest stewards, in addition to crew-specific practices that volunteers are not permitted to perform.

Fund Development and Management

Stable funding is crucial to supporting the Partnership's efforts. Parks will oversee all of the Partnership's funding. The role may be large if many small funding sources are compiled, or less intensive if funding is derived from one or a few larger sources. This role may incorporate grant writing.

Everyone Pitching In

If every Everett resident contributed just a bit more than 2 hours, we would achieve our goal of restoring and maintaining the city's parks and natural areas. That's just one work party during the program's 20 years. Many hands make light work!



Resources Objective 6: Deploy skilled field crews as appropriate

Commercial crews will be needed for priority sites that lack sufficient volunteer support or sites with difficult conditions that are unsafe or otherwise inappropriate for volunteers. Some sites containing extreme invasive plant infestations, steep slopes, riparian areas, and wetlands may be better suited to Park Operations crews or other skilled field crews.

The Partnership will seek to contract with organizations that focus on forest habitat management. The following activities will support this objective:

- Park Operations staff will continue to work on key management efforts, hazard trees, volunteer support, and training for forest stewards to increase community capacity.
- Nonprofit crews (such as Washington Conservation Corps, Student Conservation Association, and EarthCorps) will have priority to be hired, as needed, for fieldwork at difficult sites and occasionally for volunteer management at large events, given their expertise.
- Private landscaping and habitat restoration companies (commercial crews) will be hired for highly technical projects as budget and need dictate.

Resources Objective 7: Increase volunteer engagement to a cumulative 225,000 hours during the Program's 20 years.

In 20 years, volunteers are forecasted to provide close to 225,000 hours, valued at $4.9 million, based on the 2012 Independent Sector valuation of a volunteer hour at $21.79 in Washington State. To put this number in perspective, if every Everett resident contributed slightly more than 2 hours during the entire 20-year program, the plan would achieve its restoration and maintenance goals.

To meet the needs of all volunteers, the Green Everett Partnership will provide several ways in which they can participate. A variety of large volunteer events can be held in conjunction with community groups and businesses. The Forest Steward Program can support community leaders in developing and coordinating regular work parties that volunteers can attend as often as they wish. Active management at these sites will range from large invasive plant removal projects and planting native species to monitoring past restoration.

The Partnership provides opportunities for individuals of varying physical ability and time commitment to get involved. Increased levels of volunteerism will be encouraged. Volunteers who participate in one-day events with a business

or community group will be invited to continue their participation in ongoing work parties. Frequent volunteers may be interested in becoming forest stewards so as to increase their involvement. To do this, there will be a need to keep existing volunteers motivated by showing them how their efforts, in concert with those of many other volunteers, have a significant impact in maintaining and restoring Everett's forested parks.

There are numerous other volunteer activities for those who are uninterested or unable to participate in physical fieldwork, including photography, database and administrative work, publicity and marketing, fund-raising, sponsor recruitment, and bringing snacks and beverages to work parties.

In addition to encouraging current volunteers, new volunteers can be recruited through community outreach that emphasizes their critical need and the important role they play in effective management. Partnerships with community, youth groups, businesses, and schools can also be used to introduce new volunteers to the program.

Diversity within the Partnership can strengthen work efforts and build community. An important component of outreach efforts will involve contacting neighborhoods that have not traditionally participated in environmental restoration or stewardship. Outreach to these neighborhoods can be increased by working with local community groups, youth organizations, schools, and businesses. Informational signs at park sites can be posted describing the work under way and inviting participation. The existing partnership between Everett Parks and the Everett School District can be strengthened to provide opportunities for students who want to complete community service requirements for graduation.

Resources Objective 8:
Increase productivity by providing support and materials to volunteers

The Green Everett Partnership projects will involve community groups, individual volunteers, City of Everett and Forterra staff, nonprofits, and professional contractors. The Partnership will help volunteer groups identify maintenance and restoration needs, obtain materials and tools, develop site plans, conduct Best Management Practices trainings, coordinate large events, and write grant applications. Fieldwork efficiency can increase by creating clear lines of communication, coordination, easy access to resources, and support.

The Partnership will provide the following resources:

- Forest steward training events and the Green Everett Partnership *Forest Steward Field Guide*
- Project monitoring and documentation to assess and track restoration efforts
- Outreach materials and help with recruiting volunteers in consultation with the city
- Restoration materials such as plants, mulch, and tools
- Volunteer networking between forest steward groups
- Help with maintenance and sites or tasks not appropriate for volunteers

The Green Everett Partnership's primary goal is to reestablish and maintain a healthy, sustainable urban forest. The Partnership is an intensive, one-time intervention to restore the health of Everett's urban forests through community action, volunteer effort, and strategic restoration planning. After 20 years and enrollment of the projected 354 acres in the program, labor and funding needs can be reduced to a maintenance level, but will continue to exist. The goal of a healthy forest can be achieved only by careful management of resources.

IV. Adaptive Management

Urban forests are complex ecosystems influenced both by natural factors and the human systems that surround them. These human systems that impact and ultimately must care for these ecosystems are equally complex. Any strategy to restore and maintain forested parklands must systematically address all of the factors that affect the health of those lands. In response to this complexity, an adaptive management model has been developed.

Adaptive management systematically improves management policies and practices. It is a repeating cycle of six steps: problem assessment, strategy development, implementation, monitoring, evaluation, and strategy adjustment (see Figure 14). Once an evaluation is complete, new information gathered from monitoring is used to reassess the problem and develop new strategies as needed. Then implementation, monitoring, and evaluation occur, and the cycle begins again.

This section describes how the Partnership will apply adaptive management and the Balanced Scorecard approach to track and monitor progress, distribute resources, and report on the Partnership's success. The Balanced Scorecard approach to strategy development and monitoring helps assess all aspects of the program (fieldwork, community, and resources) necessary to reach the goal of enrolling all 354 acres in restoration by the end of 2032. Simply monitoring the outcomes of fieldwork would not allow staff to anticipate problems and make adjustments to other parts of the program. The Balanced Scorecard allows staff to track the resources and community support necessary for accomplishing the fieldwork.

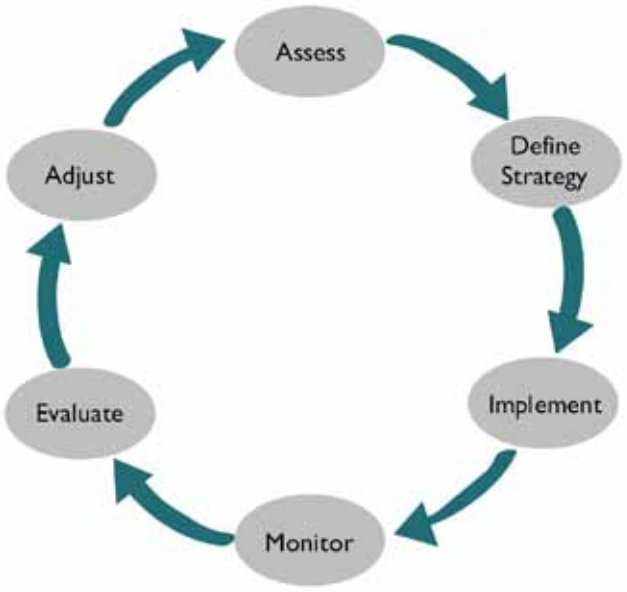


Figure 14. Adaptive management framework cycle

Measuring Success

Two types of information will help in analyzing the Green Everett Partnership's effectiveness: program monitoring and field monitoring. Monitoring allows for improvement in the Partnership programs' design and performance by measuring the effectiveness of strategies and techniques used. The results of monitoring are fed back into Partnership planning and methodology to increase effectiveness. Monitoring and evaluation will also provide accountability to funding sources and supporters, and help ensure that goals and benchmarks (see Appendix G) are met.

Program Monitoring Plan

At the close of each year, Green Everett Partnership staff will collect data on Balanced Scorecard measures and track progress toward the annual work plan goals and benchmarks. Data management systems will be developed to record information pertinent to these measurements throughout the year so that progress can easily be summarized at year's end. For example, data on volunteer events will be entered into a database that will be used to track the number of participants and the number of times an individual volunteers per year.

Figure 15 shows the Balanced Scorecard strategy map, and Table 9 shows the Balanced Scorecard for the three key elements of implementing the 20-year plan: fieldwork, community, and resources. By measuring progress toward each objective, one can assess the effectiveness of the strategies described in the Implementation section. The effectiveness of program strategies needs to be tracked throughout the life of the plan, and, through adaptive management, adjustments should be made when necessary.

Balanced Scorecard

OBJECTIVE		MEASURE
Restore and maintain 354 acres of parks and natural areas by 2032		# of acres in restoration to annual goal
FIELDWORK: All 354 acres are restored by 2032.		
Evaluate	Evaluate conditions and prioritize sites for restoration using tree-iage model	# sites evaluated, prioritized
Plan	Develop annual work plan for each active Park	Annual work plan completed identifying active management sites at each active Park
Implement	Implement restoration projects optimizing ecological function, using the 4-phase approach	• # of acres entered into active management • Best practices evaluated annually and updated as needed
Monitor	• Establish monitoring program • Monitor and maintain sites over the long term	• Annual monitoring report • # of acres entered into Phase-4 work • Maintenance is performed as indicated
COMMUNITY: An informed, involved, and active civic community supports the Green Everett Partnership.		
Residents	Educate and engage community about problem and solution through Green Everett Partnership	Outreach and education program materials developed and distributed
	Community supports and desires active management of forested parklands through widespread understanding of the issue and support of the Partnership as a solution	• % of residents volunteering each year • # of return volunteers
	Encourage businesses to contribute to program goals	• # of businesses supporting program through sponsorship, in-kind contributions, or volunteer events • # of businesses supporting volunteer events
Volunteers	Engage youth and community organizations in restoration and monitoring	• # of groups participating in events • # of hours contributed
	Recruit and train forest stewards in volunteer management and BMPs	• # of active forest stewards • # of forest steward events
	Demonstrate appreciation for volunteers and seek input into program	• # of volunteer suggestions implemented • # of volunteer recognition activities
RESOURCES: Sufficient resources are available to actively manage sites and provide long-term maintenance.		
Financial	Continue current municipal funding	$ budgeted and sourced to meet management requirements
	Develop long-term, stable public funding source	Mechanisms in place by 2018 sufficient to meet need
Paid Staff & Labor	Provide sufficient staff to support fieldwork, volunteer management, and Partnership programs	• # staff/crew dedicated to supporting the program • % of requests for crew/staff assistance completed
	Deploy skilled field crews for priority sites lacking volunteer support or sites with difficult conditions	• # of acres in restoration due to crew/staff • % of skilled field crews trained in BMPs
Volunteer Labor	• Increase number of volunteer hours to 10,800 per year by 2018 and 18,000 by 2022 • Increase productivity by providing support and materials to volunteers	• # of hours to annual goal • Estimated value of volunteer contribution • $ and hours/acre enrolled • Staff cost per volunteer hour • # of tool/material requests processed

Table 9. Balanced scorecard

Field Monitoring Plan

As the restoration and maintenance program proceeds, routine monitoring of restoration sites will also be conducted to track their condition and health and gauge progress. Success will rely on developing and refining effective strategies to remove and control invasive plants.

To monitor fieldwork, each of the 354 acres will be tracked as they are brought into active management. Volunteer and skilled field crew time will be devoted to revisiting sites that have been previously worked on and assessing their ongoing needs as they move through the four phases of restoration. These urban parks will always be subject to pressure from their surroundings; although the work needed decreases dramatically each year that an area goes through the program. Phase 4 of restoration is carried out indefinitely.

As the Partnership enrolls more acres in restoration, tracking can become complicated. Managing data entry and paperwork as the program grows has proven to be expensive in other Green Cities. To increase efficiency, restoration progress can be tracked using an online database called CEDAR, which was developed specifically for Green Cities to collect work metrics from staff, contractors, and forest stewards. CEDAR is also connected to an existing Geographic Information System map called the Interactive Habitat Map (currently housed on EarthCorps' website), which shows all acres in active restoration. In coordination with the city's Information Technology Department, and if judged appropriate for use in the Green Everett Partnership, there would be an upfront investment to get all restoration sites set up on CEDAR and the Interactive Habitat Map, with some annual costs to keep the system up to date.

Currently, CEDAR is being used in Seattle and Tacoma as part of a test pilot. In 2013, Forterra will evaluate the costs of adding additional cities and provide that as an option to the Green Everett Partnership as resources allow. Moving to an online tracking system like CEDAR will allow the Partnership to supplement on-the-ground monitoring with a spatial tracking system to guide work plans and direct resources where they are most needed each year.

Resources Distribution

Funding for the Green Everett Partnership is assumed to continue to be housed entirely within the Park Operations budget for the first two years. After that, Park Operations will continue to oversee program funding and will work toward generating additional noncity public funding and donations from outside sources throughout the duration of the Partnership's 20-year span. The Partnership will allocate funds for the three program areas — community, fieldwork, and resources — in proportions that will change during the course of time to help ensure that the program's basic goals are achieved. As it grows from single-park efforts to a system-wide program, the emphasis will shift funding program development in support of fieldwork. Table 10 shows the evolution of fund distribution during the plan's 20-year time period.

Table 10. Funding distribution by program area

Program Area	Percentage of Total Green Everett Partnership Budget			
	Short-Term		Mid-Term	Long-Term
	2013–2015	2016–2017	2018–2023	2023–2032
Community	20%	25%	20%	10%
Fieldwork	50%	55%	60%	75%
Resources	20%	10%	10%	5%
Administration	10%	10%	10%	10%

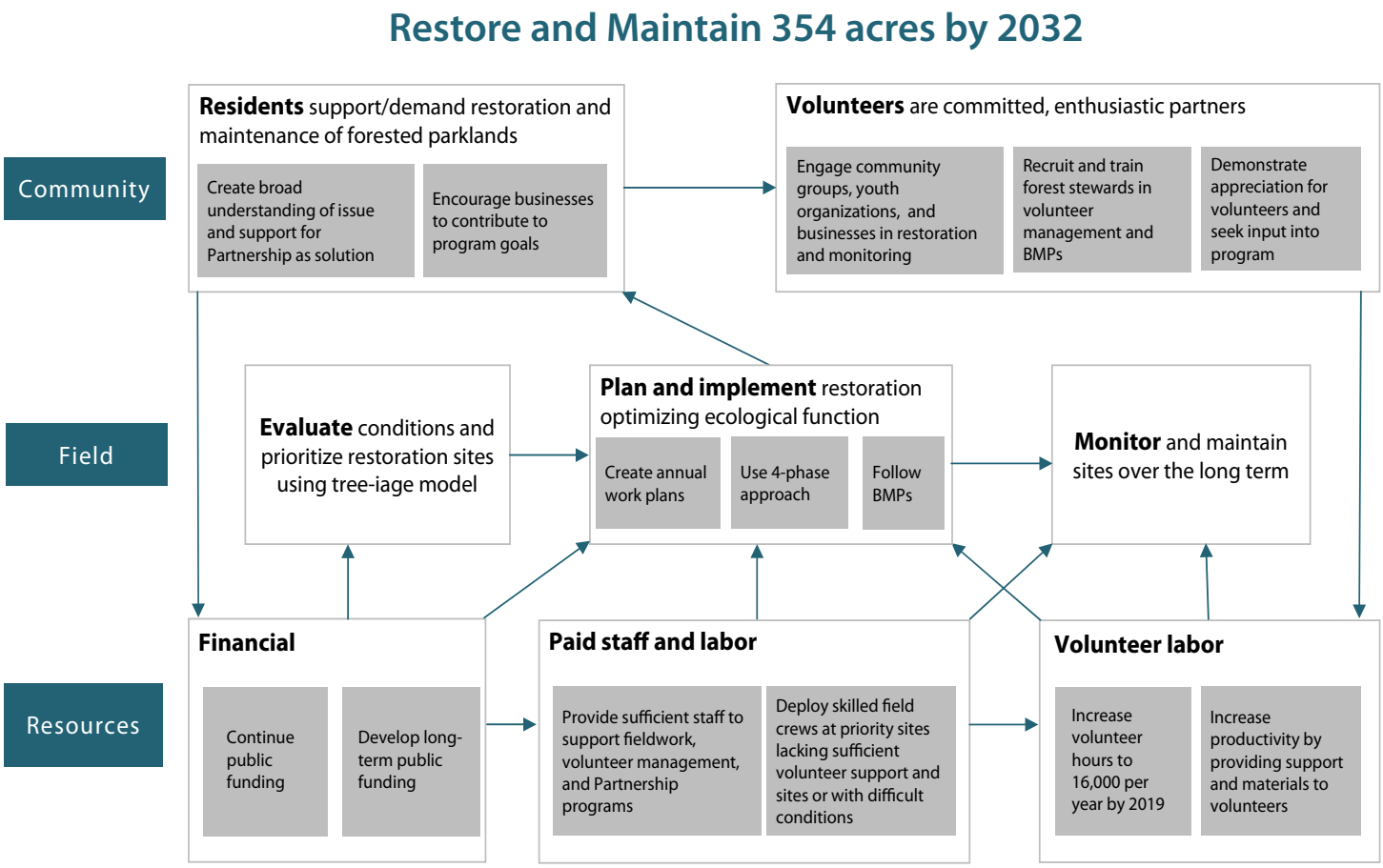


Figure 15. Balanced scorecard strategy map

At the front end, resources will be directed toward recruiting and supporting forest stewards, along with demonstrating on-the-ground results and success in the field. The focus will be on activities such as forming critical relationships with supporters, distributing electronic advertisements and mailers, and using large-event planning and publicity to create public interest and recognition of the Green Everett Partnership. These activities will ramp up during the first five years (2013–2017) as volunteer efforts grow. Once a strong volunteer program is established, some resources can shift to provide more field support for restoration projects.

As funding allows in the future, the forest management budget can expand from funding Partnership staff time and supporting volunteers to include additional skilled field crews. Implementation tools such as BMPs would be incorporated into their work. Skilled field crew time and/or field staff are programmed to be added during the Partnership's 20 years and plateau in 2032 at a number that can support volunteers in the continued maintenance of forested parklands.

As visibility and recognition increase, increased levels of public and private funding can materialize and support increased volunteer participation. The role of volunteers will continue beyond 2032, since forested parklands will need ongoing volunteer support and stewardship.

Reporting and Sharing Knowledge

The Green Everett Partnership's progress will be reported annually to partners, members, and the public. Annual work plans will be adjusted in response to available funding, monitoring results, and emerging knowledge of successful techniques.

Partnership staff will be encouraged to develop new methods of urban forest management and inventive outreach strategies, and network with regional restoration groups, which will provide an opportunity for staff to share information and learn from other agencies. As a member of the Green Cities network, the Green Everett Partnership will have opportunities to share successes and challenges with other cities (Seattle, Tacoma, Kirkland, Redmond, and Kent) that are dedicated to a similar goal and vision. Written materials, including this 20-year plan and the *Forest Steward Field Guide,* will be posted on the Green Everett Partnership webpage (www.greeneverett.org), and all parties using these resources will be asked to give feedback on the Partnership's methods and materials.

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VI. Appendices

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Appendix H. Near- and Long-Term Strategic Plan and Benchmarks

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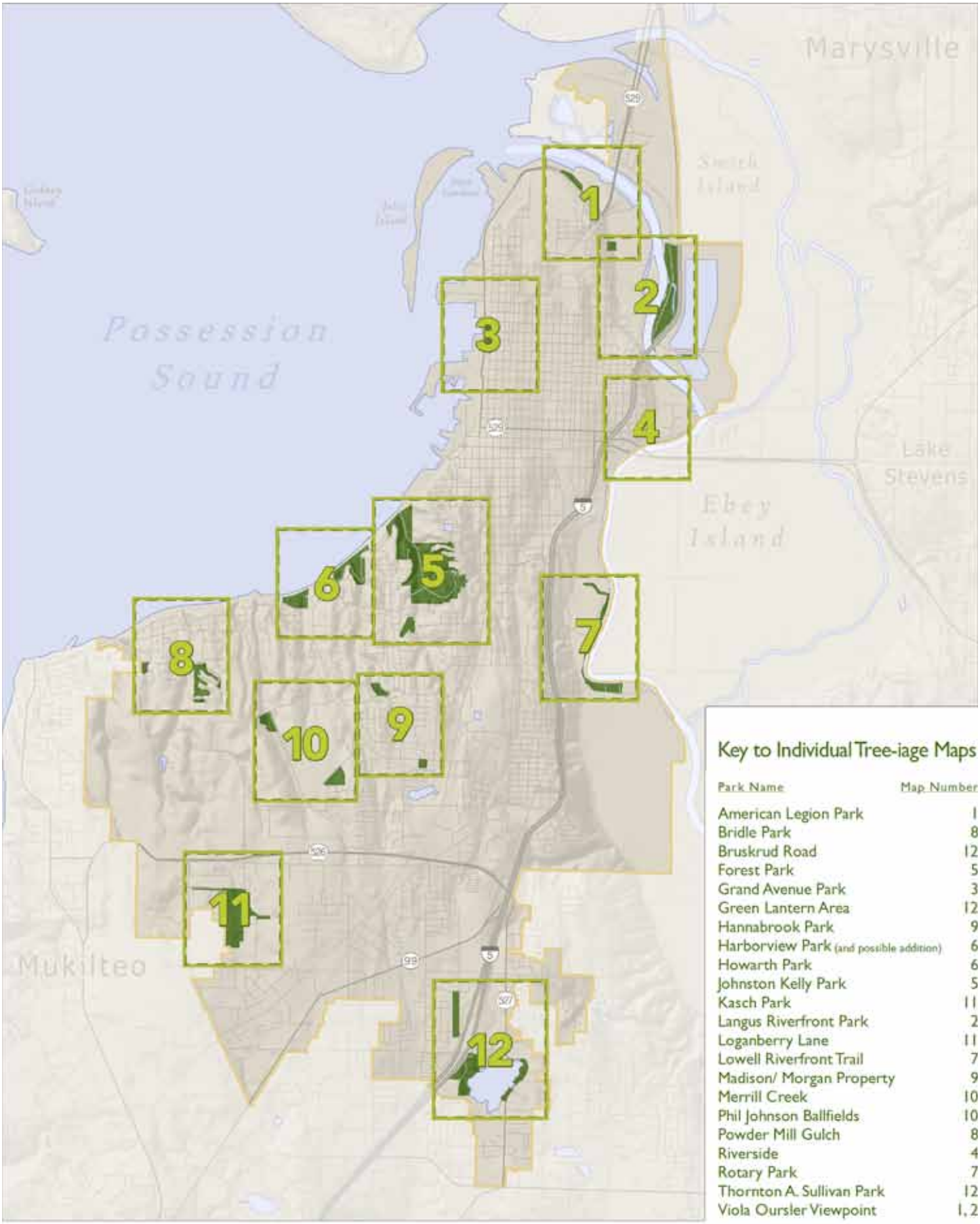
Appendix J. Glossary

Appendix A. Maps of Tree-iage Categories per Park: Overview and Individual Park Maps

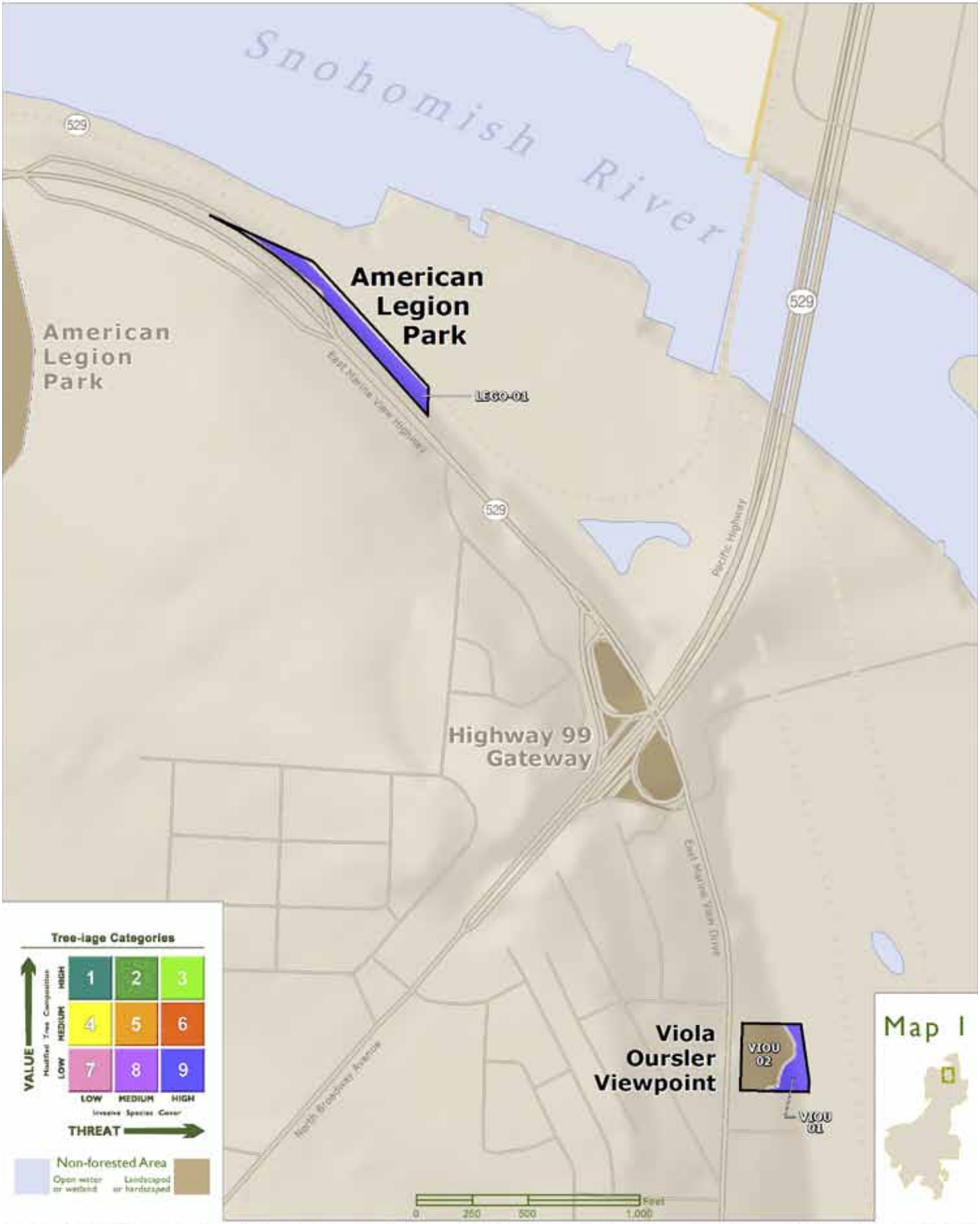


Key to Individual Tree-iage Maps

Park Name	Map Number
American Legion Park	1
Bridle Park	8
Bruskrud Road	12
Forest Park	5
Grand Avenue Park	3
Green Lantern Area	12
Hannabrook Park	9
Harborview Park (and possible addition)	6
Howarth Park	6
Johnston Kelly Park	5
Kasch Park	11
Langus Riverfront Park	2
Loganberry Lane	11
Lowell Riverfront Trail	7
Madison/ Morgan Property	9
Merrill Creek	10
Phil Johnson Ballfields	10
Powder Mill Gulch	8
Riverside	4
Rotary Park	7
Thornton A. Sullivan Park	12
Viola Oursler Viewpoint	1, 2

map created by FORTERRA in partnership with the City of Everett

Tree-iage Categories per Park - Map 1



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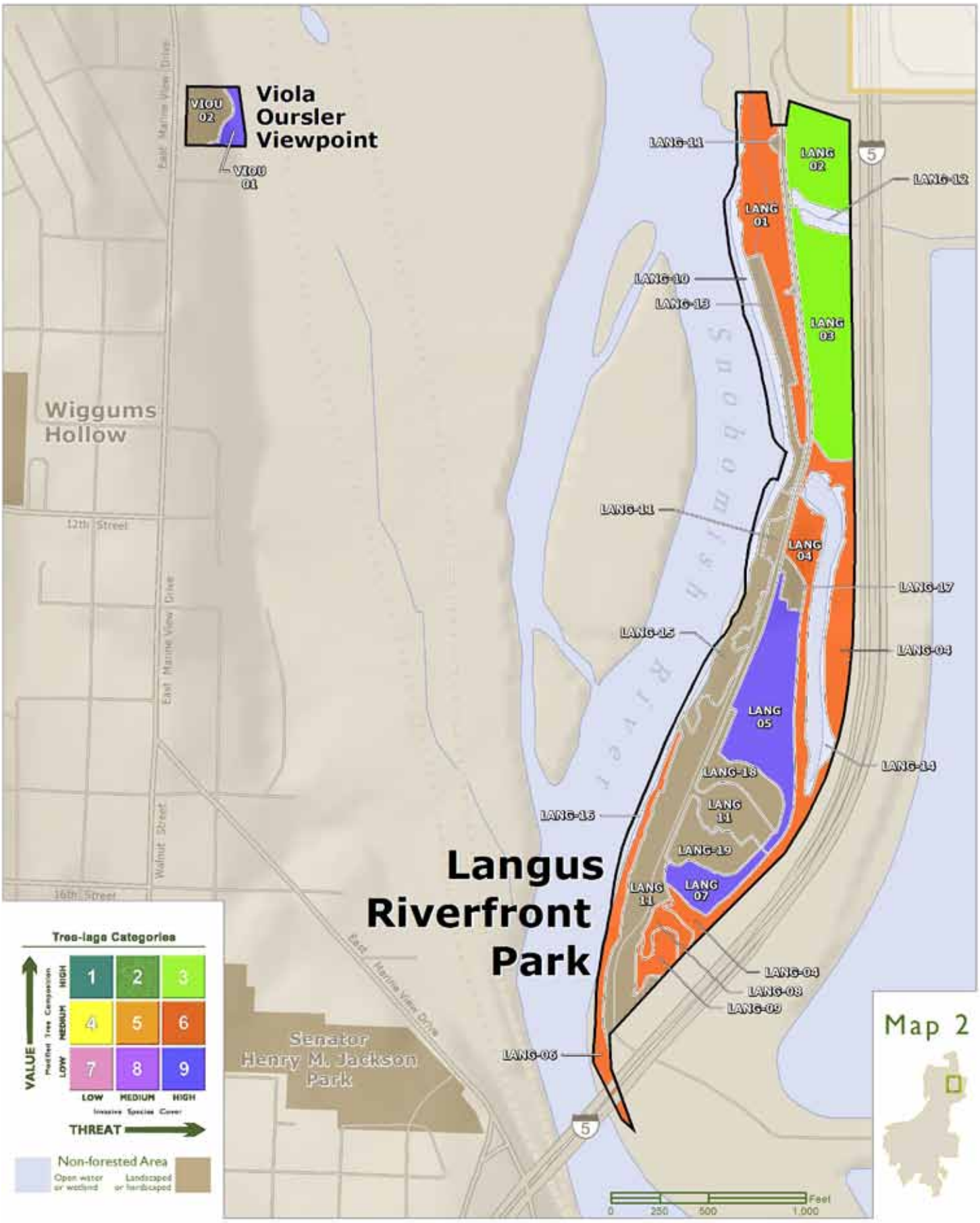
Tree-iage field assessment conducted by American Forest Management, Inc., October 2012

Tree-iage Categories per Park - Map 2



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Tree-iage field assessment conducted by American Forest Management, Inc., October 2012

Tree-iage Categories per Park - Map 3

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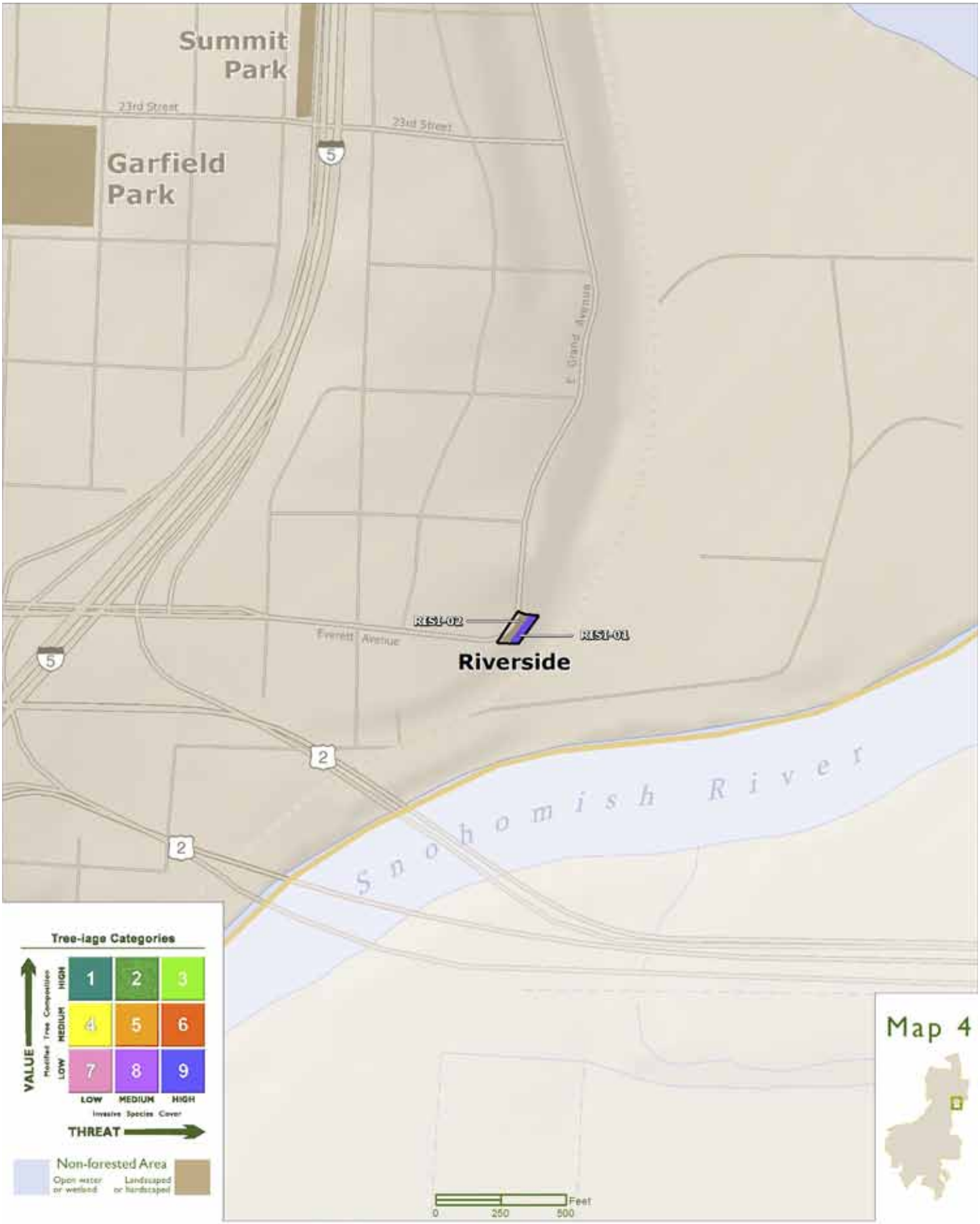
Tree-iage Categories per Park - Map 4



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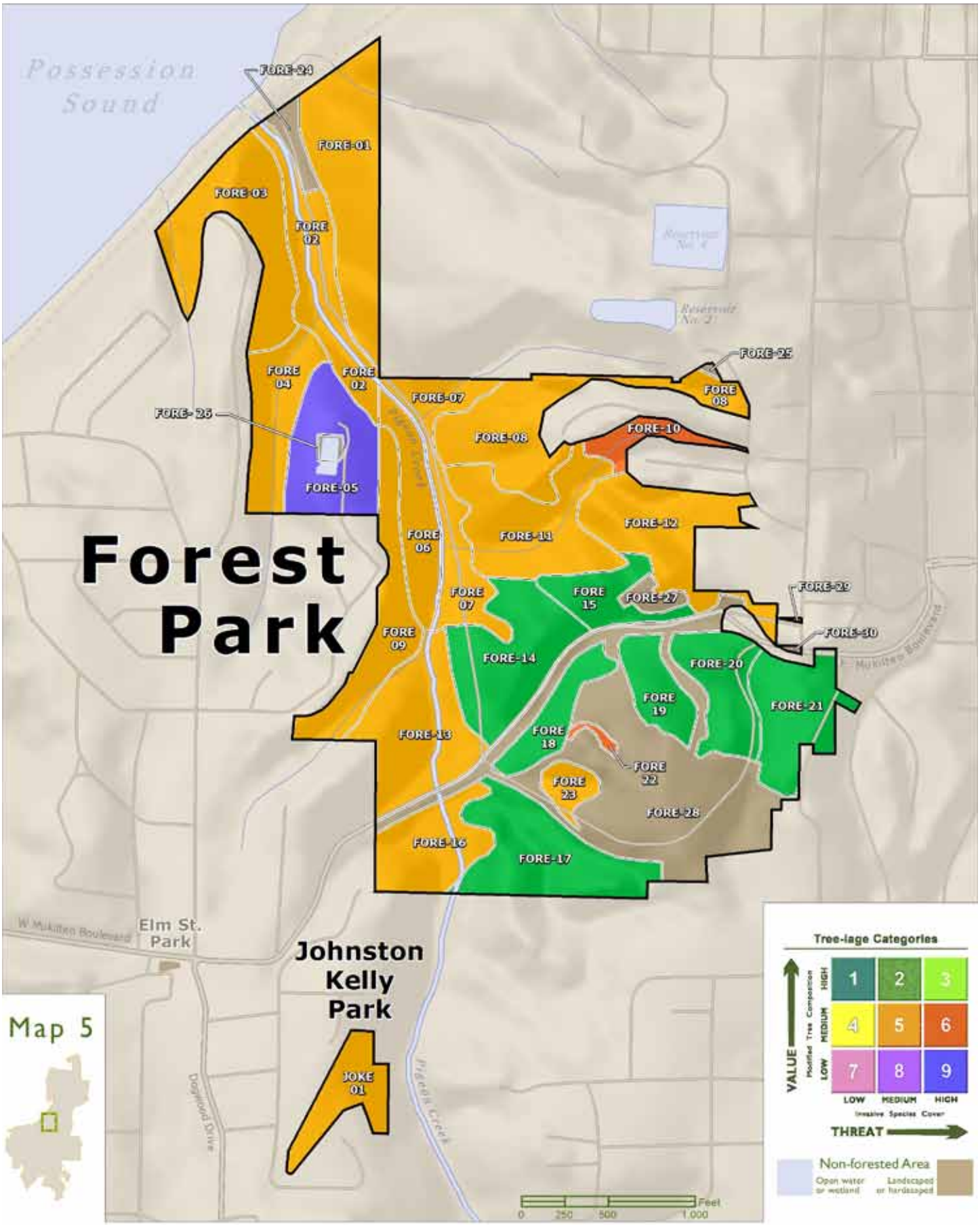
Tree-iage field assessment conducted by American Forest Management, Inc., October 2012

Tree-iage Categories per Park - Map 5



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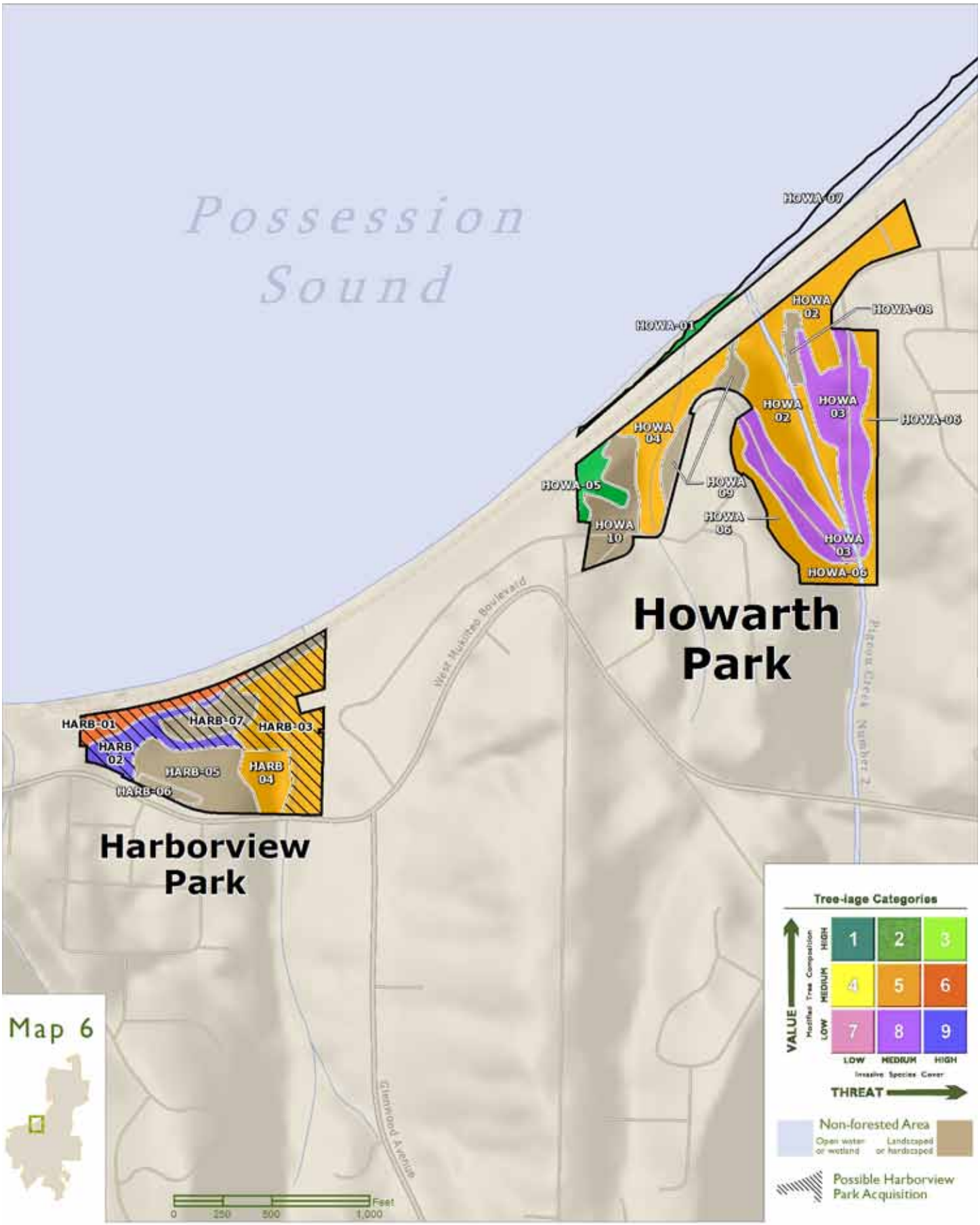
Tree-iage field assessment conducted by American Forest Management, Inc., October 2012

Tree-iage Categories per Park - Map 6



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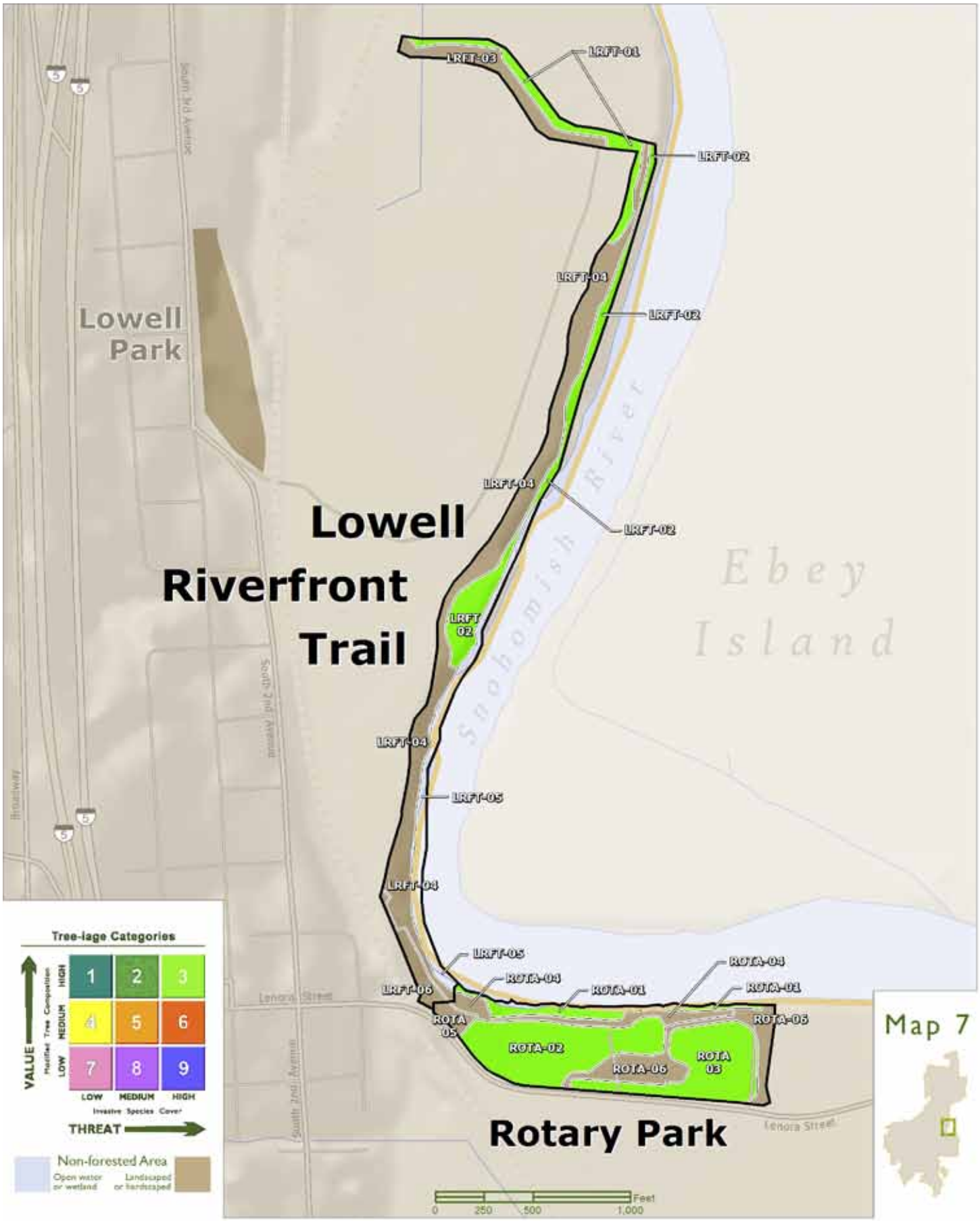
Tree-iage Categories per Park - Map 7



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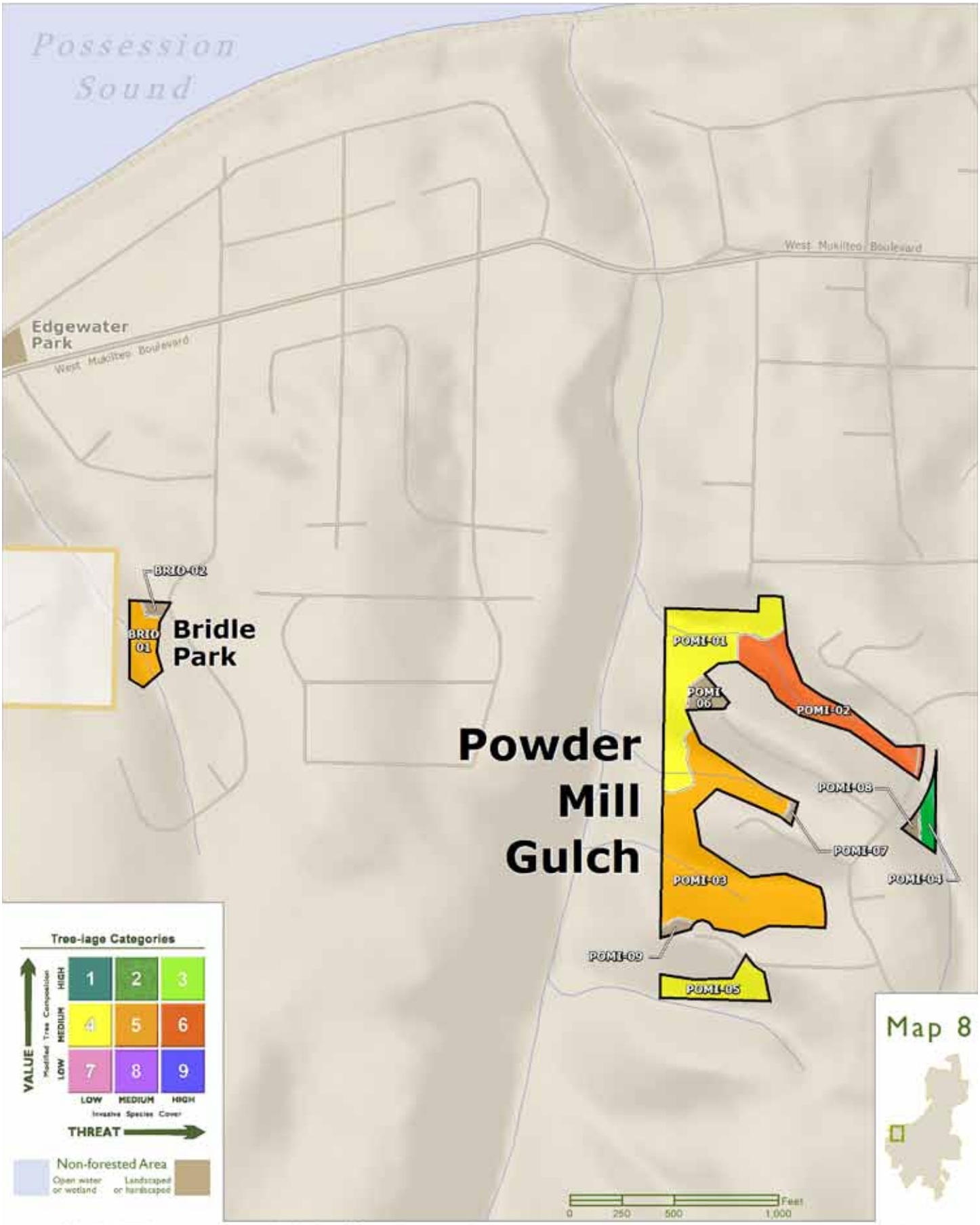
Tree-iage field assessment conducted by American Forest Management, Inc., October 2012

Tree-iage Categories per Park - Map 8



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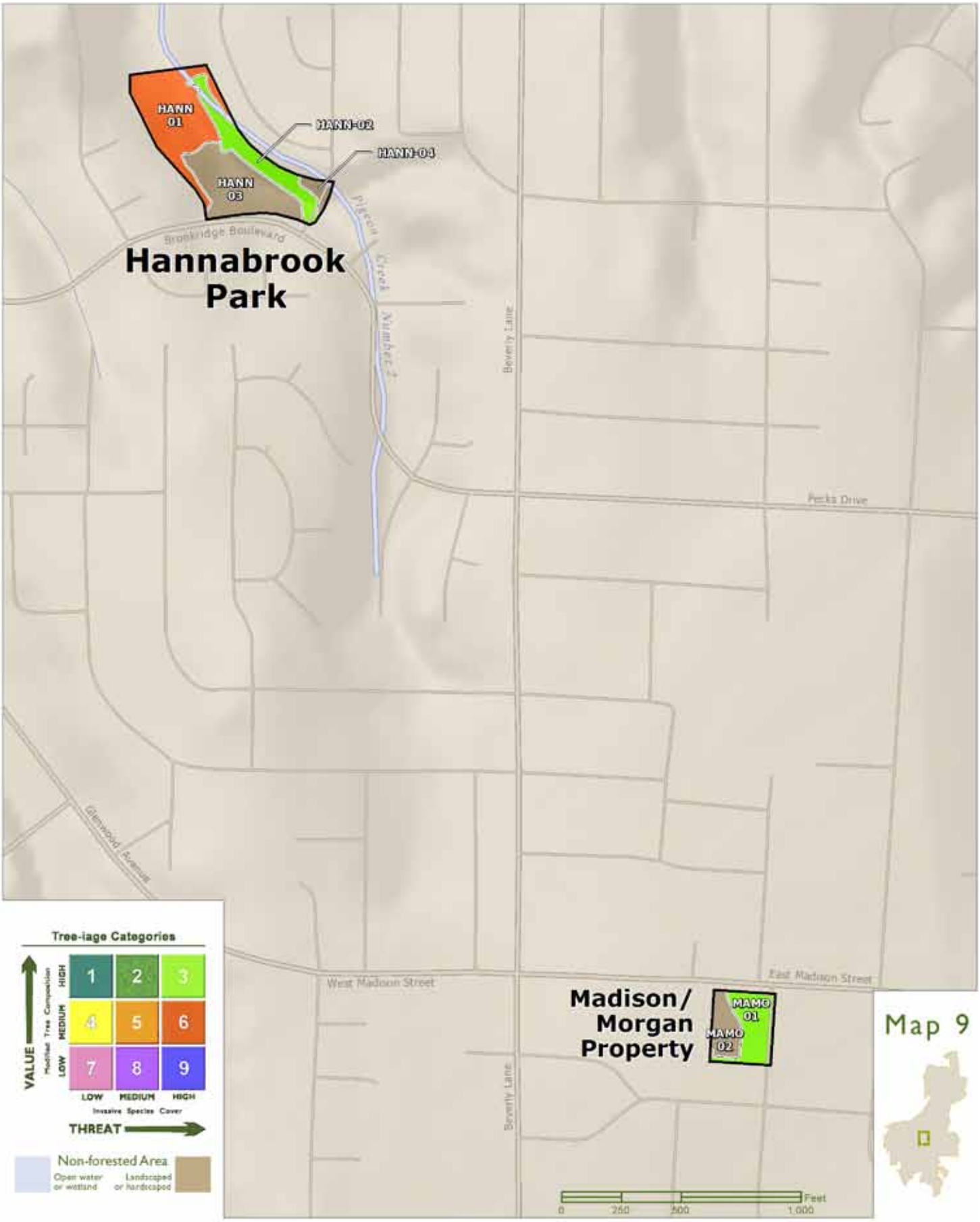
Tree-iage field assessment conducted by American Forest Management, Inc., October 2012

Tree-iage Categories per Park - Map 9



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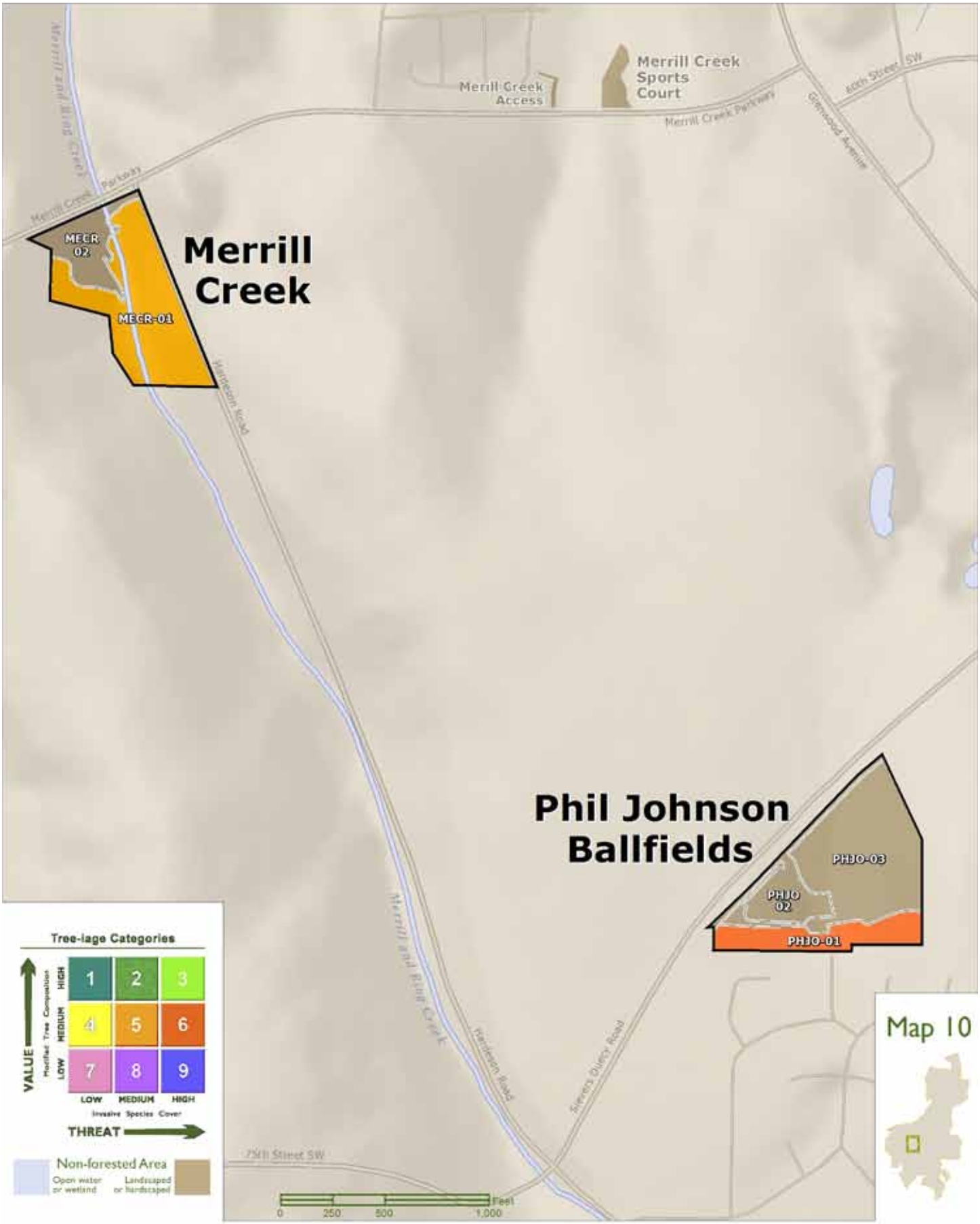
Tree-iage field assessment conducted by American Forest Management, Inc., October 2012

Tree-iage Categories per Park - Map 10



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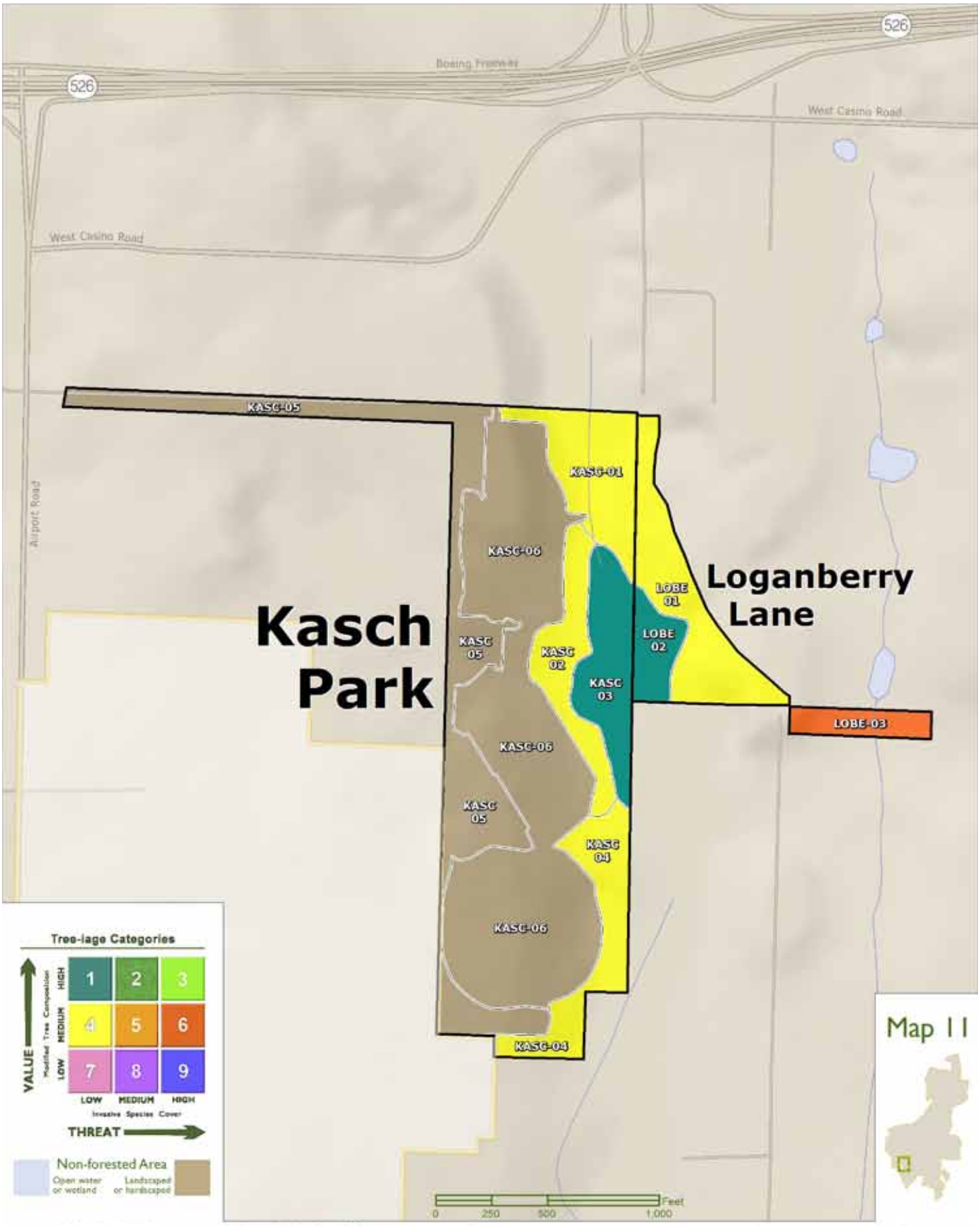
Tree-iage field assessment conducted by American Forest Management, Inc., October 2012

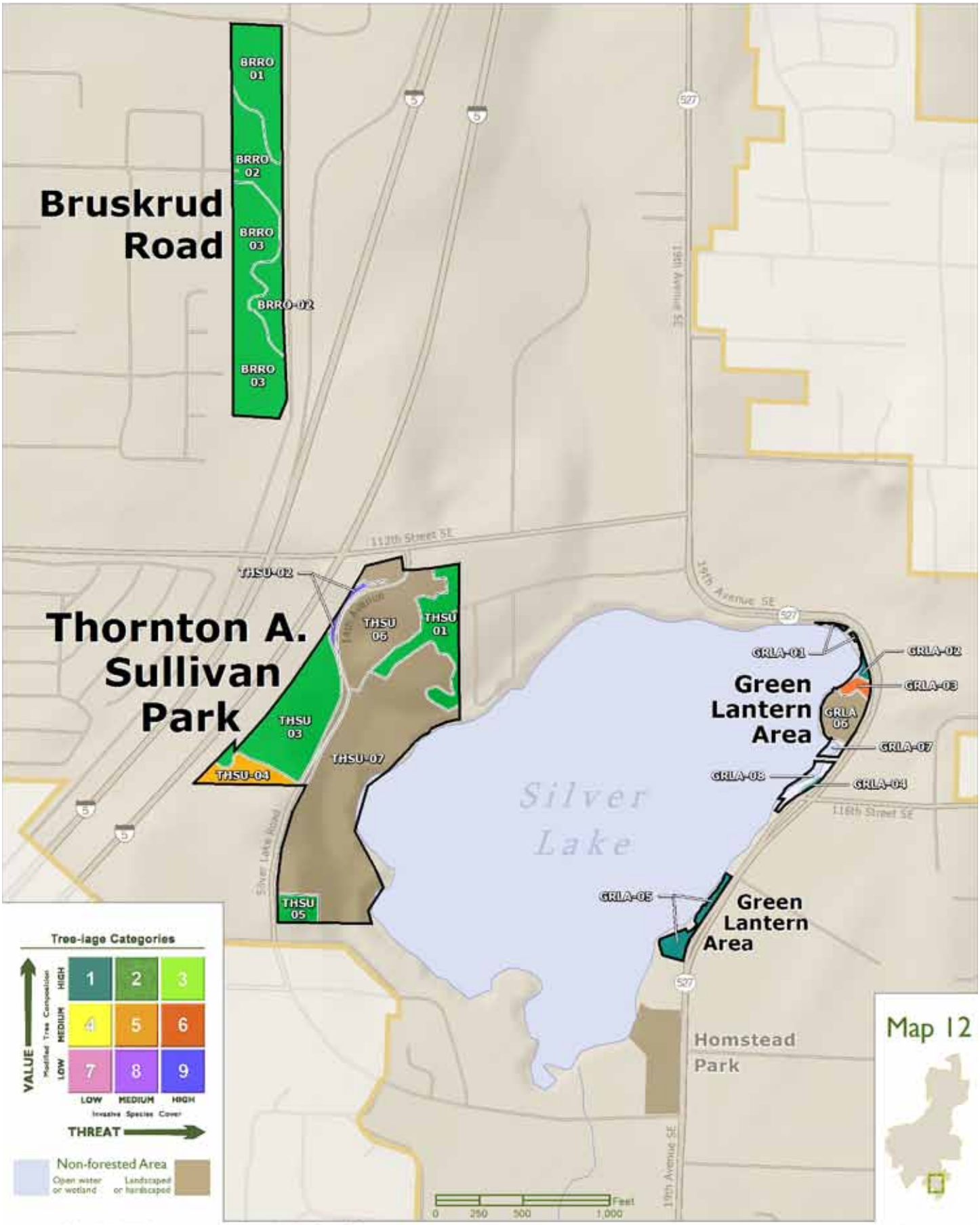
Tree-iage Categories per Park - Map 11



map created by FORTERRA in partnership with the City of Everett

Tree-iage field assessment conducted by American Forest Management, Inc., October 2012

Tree-iage Categories per Park - Map 12



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Tree-iage field assessment conducted by American Forest Management, Inc., October 2012

Appendix B. Distribution of Tree-iage Categories in Each Park

PARK NAME	TREE-IAGE CATEGORY (HMU Acres)									
	1	2	3	4	5	6	7	8	9	**Total Acres**
American Legion Park									1.91	1.91
Bridle Park					1.14					1.14
Bruskrud Road		15.09								15.09
Forest Park		44.45			106.71	2.62			7.92	161.70
Grand Avenue Park									3.35	3.35
Green Lantern Area	1.17					0.35				1.52
Hannabrook Park			1.22			2.53				3.75
Harborview Park					1.57					1.57
Harborview Park (possible acquisition)					5.05	1.52			2.22	8.79
Howarth Park		1.65			17.19			8.19		27.03
Johnston Kelly Park					4.54					4.54
Kasch Park	4.7			14.15						18.85
Langus Riverfront Park			10.34			18.33			7.86	36.53
Loganberry Lane	2.02			6.23		1.78				10.03
Lowell Riverfront Trail			5.39							5.39
Madison/ Morgan Property			1.11							1.11
Merrill Creek					7.34					7.34
Phil Johnson Ballfields						2.80				2.80
Powder Mill Gulch		0.49		6.18	8.14	3.12				17.93
Riverside									0.04	0.04
Rotary Park			11.58							11.58
Thornton A. Sullivan Park		9.80			1.37				0.39	11.56
Viola Oursler Viewpoint									0.61	0.61
Totals rounded to the nearest acre	**8**	**71**	**30**	**27**	**153**	**33**	**0**	**8**	**24**	**354**

Appendix C. Site-Specific Information per Park

The following overview is a summary of ecological conditions documented during the rapid assessment process. This data was used to categorize habitat management units (HMUs) into tree-iage categories and does not include detailed recommendations for stewardship activities. Note: HMUs were deemed "plantable" or "not plantable" based on whether site conditions were appropriate for tree seedling establishment. A site may be deemed "unplantable" due to lack of proper growing conditions such as dense native understory vegetation that doesn't lend itself to interplanting. However, Green Everett Partnership staff and forest stewards will develop more-detailed site-level stewardship plans to further assess planting conditions and outline management recommendations as the 20-year plan is implemented.

AMERICAN LEGION PARK – MAP 1

- Located at 145 Marine View Drive in North Everett
- 1.91 total acres
- 1 HMU

LEGO-01 (1.91 acres, tree-iage category 9)

This HMU is a deciduous forest stand with crown closure 40%–69% and dominated by bigleaf maple and red alder. The understory is dominated by Himalayan blackberry and salmonberry. Invasive cover is high and comprises Himalayan blackberry, English ivy, Scotch broom, morning glory, and reed canary grass. The slope above the railway is completely covered with invasive species. The site is plantable and would benefit from invasive plant management and installation of native conifer species.

BRIDLE PARK – MAP 8

- Mini park located on Sound Avenue in the Boulevard Bluffs neighborhood
- 1.32 total acres
- 2 Habitat Management Units

BRID-01 (1.14 acres, tree-iage category 5)
This HMU is a mixed-forest type consisting mostly of mature bigleaf maple and western redcedar with a crown closure of 40%–69%. The understory is dominated by invasive species, including Himalayan blackberry, morning glory, English ivy, and herb Robert. Invasive cover is heaviest along the park boundary due to yard waste dumping. Restoration will focus on invasive removal and replanting with native understory.

BRID-02 is landscaped.

BRUSKRUD ROAD – MAP 12

- Southeast corner of the Twin Creeks neighborhood
- 15.09 total acres
- 3 Habitat Management Units

BRRO-01 (3.83 acres, tree-iage category 2)
This HMU is a mature mixed-conifer forest dominated by Douglas-fir and western redcedar. Crown closure is greater than 70%. The understory is dominated by salal and Indian plum. Invasive cover is medium and comprises English ivy, Himalayan blackberry, morning glory, English holly, and evergreen blackberry. This area is not considered plantable due to dense understory, but would benefit from invasive plant removal. Greater than 1% of the area within this HMU has experienced tree failure due to falling trees in high-water conditions.

BRRO-02 (4.29 acres, tree-iage category 2)
This HMU is a mixed forest with a middle-aged stand. Crown closure is 10%–39% and consists mostly of black cottonwood and western redcedar. The understory is dominated by sword fern and salmonberry. Invasive cover is medium and comprises Himalayan blackberry, English ivy, morning glory, yellow archangel, and reed canary grass. The average slope across the HMU is 0 degrees. The area is not considered plantable, but would benefit from invasive plant removal. Greater than 1% of the area within this HMU has experienced tree failure due to falling trees in high-water conditions.

BRRO-03 (6.97 acres, tree-iage category 2)
This HMU is a mature mixed-conifer forest dominated by Douglas-fir and western redcedar. Crown closure is greater than 70%. The understory is dominated by salal and salmonberry. Invasive cover is medium and comprises English ivy, Himalayan blackberry, morning glory, English holly, and evergreen blackberry. The average slope across the HMU is 0 degrees. The area is not considered plantable due to dense understory, but would benefit from invasive plant removal. Located on the south end of the park, this HMU has dryer areas than other HMUs on this site.

FOREST PARK – MAP 5

- Located at 802 E. Mukilteo Blvd in the View Ridge and South Forest Park neighborhoods
- Home to the Everett park system's administrative headquarters and a recreational hub with forested hiking trails, a playground, tennis courts, and a swimming pool; the city's oldest and largest park
- 197 total acres
- 30 HMUs

FORE-01 (12.22 acres, tree-iage category 5)

Located in the north side of the park adjacent to the railway, this forest stand is dominated by aging bigleaf maple and red alder with some mature western hemlock mixed in. Crown closure is greater than 70% and this HMU is not considered plantable. The understory is dominated by salmonberry and sword fern. Invasive cover is medium and comprises English ivy, Himalayan blackberry, English holly, herb Robert, and morning glory. Ivy and Himalayan blackberry cover are highest along the north edge of the HMU by the railway.

FORE-02 (7.94 acres, tree-iage category 5)

This HMU includes a stream gulch and road on the north end of the park. Crown closure is 40%–69% and consists mostly of middle-aged deciduous trees, including red alder and bigleaf maple. The understory is dominated by salmonberry and elderberry. Invasive cover is medium and comprises Himalayan blackberry, reed canary grass, English ivy, English holly, and herb Robert. The site is not considered plantable.

FORE-03 (10.77 acres, tree-iage category 5)

Located on the northwest tip of the park, this HMU is dominated by maturing bigleaf maple and red alder with some Douglas-fir. Crown closure is 40%–69%. The understory is dominated by salmonberry and vine maple. Invasive cover threat is medium and comprises Himalayan blackberry, yellow archangel, English ivy, English holly, and English laurel. Himalayan blackberry and English ivy are heaviest by the road and along the north edge of the HMU. The site is not considered plantable, but invasive plant removal will be crucial to protecting this site from further degradation of the tree canopy.

FORE-04 (6.43 acres, tree-iage category 5)

Located in the northwest corner of the park, this HMU consists of aging red alder and mature Douglas-fir with a crown closure of 10%–39%. The understory is dominated by salmonberry and vine maple. Invasive cover is medium and comprises Himalayan blackberry, yellow archangel, English ivy, English holly, and English laurel. Invasive cover is heaviest along the road and creeping east into the HMU. This site is suitable for planting after invasive plant removal.

FORE-05 (7.92 acres, tree-iage category 9)

This HMU has low-quality forest canopy and high threats from invasives. This site was a clearing that now has a crown closure greater than 70% consisting of young red alder and bigleaf maple. The understory is dominated by creeping blackberry and Himalayan blackberry. Invasive cover comprises Himalayan blackberry, evergreen blackberry, English ivy, reed canary grass, and English holly. This site is not considered plantable.

FORE-06 (5.59 acres, tree-iage category 5)

Centrally located in the park, this HMU is on the west side of Pigeon Creek #1 and Pigeon Creek Road, leading to Possession Sound. Crown closure is 40%–69% and consists mostly of maturing bigleaf maple and red alder with a large western hemlock upslope. The understory is dominated by creeping blackberry and sword fern. Invasive cover threat is medium and comprises Himalayan blackberry, English ivy, English holly, English laurel, and herb Robert. Reed canary grass is found along Pigeon Creek Road and Pigeon Creek #1. This HMU is characterized by steep slopes (about 51 degrees) and is not considered plantable.

FORE-07 (7.52 acres, tree-iage category 5)

This HMU is centrally located in the park on the east side of Pigeon Creek #1 and Pigeon Creek Road. Crown closure is 40%–69% and consists of aging red alder and bigleaf maple. The understory is dominated by salmonberry and elderberry. Invasive cover is medium and comprises English ivy, Himalayan blackberry, reed canary grass, English holly, and herb Robert. This site is not considered plantable.

FORE-08 (10.29 acres, tree-iage category 5)

This HMU runs east and north of the residential cul-de-sac of 40th Place.This hardwood forest consists of aging red alder and bigleaf maple. It is similar to HMU 7, but with fewer invasive plants. Crown closure is 40%–69%. The understory is dominated by salmonberry and sword fern. Invasive cover is medium and comprises Himalayan blackberry, English ivy, reed canary grass, English holly, and morning glory. This site would benefit from invasive removal but is not considered plantable.

FORE-09 (7.57 acres, tree-iage category 5)

This HMU is located on the west side of the park. The forest stand consists of aging bigleaf maple, red alder, and some mature Douglas-fir. Crown closure is 40%–69%. The understory is dominated by salmonberry and sword fern. Invasive cover is medium, with the heaviest cover being along the road and the south end of the HMU. Invasive species present include Himalayan blackberry, English ivy, English holly, English laurel, and reed canary grass. The average slope across the site is 51 degrees. This site is not considered plantable.

FORE-10 (2.22 acres, tree-iage category 6)

The HMU is located on the western side of the park adjacent to a residential area. The forest canopy consists mainly of middle-aged bigleaf maple and red alder with a few mature western redcedars. Crown closure is greater than 70%. The understory is dominated by Himalayan blackberry and sword fern. Overall, the invasive cover threat is high. Additional invasives found on this site include English ivy, English holly, English laurel, and herb Robert. The average slope across the site is 43 degrees, and the invasive cover is heaviest on the steep slope between the houses. The site is considered plantable.

FORE-11 (10.45 acres, tree-iage category 5)

Located in the center of the park, this primarily deciduous canopy consists of maturing bigleaf maple and red alder with pockets of regenerative western redcedar and Douglas-fir. Crown closure is greater than 70%. The understory in this HMU is dominated by salmonberry and sword fern. Invasive cover threat is medium and comprises English ivy, Himalayan blackberry, English holly, herb Robert, and European mountain ash. This site is not considered plantable.

FORE-12 (9.39 acres, tree-iage category 5)

HMU 12 is located north of Mukilteo Boulevard on the east side of the park. It includes the slope behind the fire station and the fenced bluff at the police shooting range. The forest canopy consists mostly of aging bigleaf maple and red alder with crown closure greater than 70%. The understory is dominated by sword fern and salmonberry. Invasive cover threat is medium and comprises Himalayan blackberry, English ivy, English holly, English laurel, and morning glory. The site is not considered plantable.

FORE-13 (10.42 acres, tree-iage category 5)

This HMU is located north of Mukilteo Boulevard by the west entrance of the park. This medium-value canopy consists mostly of mature bigleaf maple and red alder with a few western hemlocks. The primary regenerative tree species found are also bigleaf maple and red alder. Crown closure is 40%–69%. The understory is dominated by salmonberry and sword fern. Invasive cover is medium and particularly heavy near the road. Dominant invasives include Himalayan blackberry, English ivy, reed canary grass, English holly, and morning glory.

FORE-14 (9.83 acres, tree-iage category 2)

This HMU has a mature high-quality mixed conifer stand. The dominant trees are Douglas-fir and bigleaf maple, but there are also mature western redcedar and western hemlock. Some cedars are older than 120 years. Crown closure is greater than 70%. The understory is dominated by sword fern and salmonberry. Invasive cover threat is medium and comprises English ivy, Himalayan blackberry, English holly, herb Robert, and reed canary grass. Overall, the site is not considered plantable, but would benefit from invasive plant removal. There is root rot present on this site.

FORE-15 (3.99 acres, tree-iage category 2)

This HMU has a healthy overstory consisting of mature Douglas-fir and bigleaf maple with a number of regenerative western redcedar and western hemlock. Crown closure is greater than 70%. The understory is dominated by sword fern and low Oregon grape. Invasive cover threat is medium and comprises English ivy, Himalayan blackberry, English holly, herb Robert, and reed canary grass. The site is not considered plantable. Laminated root rot was observed on some of the Douglas-fir.

FORE-16 (6.40 acres, tree-iage category 5)

This HMU is located in the southwest corner of the park next to the park entrance. Its canopy is a medium-quality, mixed-age stand of bigleaf maple and Douglas-fir. The stream draw is dominated by hardwoods. The understory is dominated by salmonberry and sword fern. Invasive cover threat is medium, comprised primarily of Himalayan blackberry, English ivy, English holly, English laurel, and Bohemian knotweed. Bohemian knotweed is particularly heavy near the west park entrance. The site is not considered plantable.

FORE-17 (10.13 acres, tree-iage category 2)

Located on the south end of the park, this HMU has a high-quality conifer forest stand consisting of mature Douglas-fir and western hemlock. Crown closure is greater than 70%. The understory is dominated by salmonberry and sword fern. Invasive cover is medium and comprises English ivy, English holly, English laurel, Himalayan blackberry, and reed canary grass. Butt rot was found on western hemlocks.

FORE-18 (3.72 acres, tree-iage category 2)

Located southeast of Mukilteo Boulevard, this HMU has a high-quality canopy consisting of mature Douglas-fir and ponderosa pine with smaller numbers of bigleaf maple and western hemlock. Crown closure is 40%–69%. The understory is dominated by sword fern and salal. Invasive cover threat is medium and comprises English ivy, English holly, English laurel, Himalayan blackberry, and herb Robert. There are also some old-growth English holly trees on this site and mistletoe is present in the western hemlocks. The site is not considered plantable, although there is already restoration with irrigation in progress.

FORE-19 (3.72 acres, tree-iage category 2)

Located in the southwest quadrant of the park, this HMU has a high-quality mixed conifer/decidous canopy. Crown closure is 40%–69% and consists mostly of mature Douglas-fir and bigleaf maple. The understory is dominated by sword fern and salal. Invasive cover is medium and comprises English ivy, English holly, English laurel, Himalayan blackberry, and herb Robert. The site is not considered plantable. Openings in the tree crown due to root rot disease are present, with small bigleaf maples growing in. Many social trails are on this site.

FORE-20 (5.83 acres, tree-iage category 2)

Located in the southeast corner of the park, this HMU sits south of Mukilteo Boulevard, west of Park Road just north of the tennis courts. This site has a healthy mixed-conifer canopy dominated by Douglas-fir and bigleaf maple, but also includes western redcedar and western hemlock. Small bigleaf maples are growing in. Crown closure is 40%–69%. Openings in the canopy are present primarily from tree loss due to laminated root rot disease. The understory is dominated by sword fern and salal. Invasive cover threat is medium and comprises English ivy, English holly, English laurel, Himalayan blackberry, and herb Robert. Many social trails are found throughout the site. The site is not considered plantable.

FORE-21 (7.23 acres, tree-iage category 2)

This high-quality canopy consists of middle-aged Douglas-fir and bigleaf maple. Crown closure is 40%–69%. Some openings in the crown are due to tree failure from root rot disease. Bigleaf maple and western hemlock are the primary regenerative trees. The understory is dominated by sword fern and low Oregon grape. Invasive threat is medium in this HMU and comprises English ivy, English holly, English laurel, Himalayan blackberry, and herb Robert. This site is not considered plantable.

FORE-22 (0.40 acres, tree-iage category 6)

This small HMU is south of Mukilteo Boulevard, adjacent to an open field to the northeast and parking lots to the southwest, with a trail running through it. Crown closure is 40%–69% and consists mostly of young bigleaf maple and Douglas-fir. The understory is dominated by salmonberry and sword fern. Invasive cover threat is high and comprises Himalayan blackberry, Scotch broom, English ivy, Canada thistle, and herb Robert. The average slope in this HMU is 28 degrees, and the site is considered plantable.

FORE-23 (1.72 acres, tree-iage category 5)

Located in the south end of the park, this HMU has a mixed conifer/deciduous canopy with 40%–69% crown closure. Dominant tree species include bigleaf maple and Douglas-fir, while the understory is dominated by salmonberry and Himalayan blackberry. Invasive cover threat is medium and comprises Himalayan blackberry, English ivy, English holly, English laurel, and herb Robert. Invasive species removal and planting of native understory are recommended. Open areas have wet sites with few trees. Conifers are concentrated at the southern tip of the HMU.

FORE-26 and **-27** are hardscaped.

FORE-24, -25, -28, -29 and **-30** are landscaped.

GRAND AVENUE PARK – MAP 3

- Located in the northeast section of Everett along 1800 Grand Avenue
- 5 total acres
- 2 Habitat Management Units

GRAV-01 (3.35 acres, tree-iage category 9)

This HMU, located on the west edge of the park, is classified as natural area. The site has a steep slope of 66 degrees dominated by invasive plants, including Himalayan blackberry and morning glory. Additional invasives include English ivy, morning glory, evergreen clematis (old man's beard), and Bohemian knotweed. Native tree species also on the site include bigleaf maple and willow with crown closure of 10%–39%. The site is considered plantable.

GRAV-02 is landscaped.

GREEN LANTERN AREA – MAP 12

- Located at 11420 19th Avenue SE on the east side of Silver Lake
- Includes fishing and trails; part of the Green Lantern Trail
- 4.01 total acres
- 8 Habitat Management Units

GRLA-01 (0.04 acres, tree-iage category 1)

Located on the north end of the Green Lantern Area, this HMU is a high-quality natural area dominated by red-osier dogwood and Pacific ninebark. There is evidence of past restoration activity. The invasive cover threat is low and comprises reed canary grass and Himalayan blackberry. This site is not considered plantable, but would benefit from invasive plant removal.

GRLA-02 (0.20 acres, tree-iage category 1)

Located on the north end of the Green Lantern Area, this HMU is a high-quality natural area dominated by red-osier dogwood and Pacific ninebark. Many native shrubs are established from past restoration efforts. The invasive cover threat is low and comprises reed canary grass and Himalayan blackberry. This site is not considered plantable, but would benefit from invasive plant removal.

GRLA-03 (0.35 acres, tree-iage category 6)

This HMU has a sparse overstory and consists mostly of western redcedar and Douglas-fir interspersed with planted varieties, including Sawara cedar. The understory is dominated by hardhack spirea and willow. Invasive cover threat is high and comprises Himalayan blackberry, English ivy, English laurel, English holly, and reed canary grass. Some invasives have been removed along the trail, but this site would benefit from additional invasive removal and planting of native species.

GRLA-04 (0.13 acres, tree-iage category 1)

This healthy natural area is on the southern tip of the Green Lantern Area. Overstory species include western redcedar and red alder, with some regenerative Douglas-fir and bigleaf maple. The understory is dominated by red-osier dogwood and Pacific ninebark. Invasive cover is low and comprises reed canary grass. Many native shrubs have been established through prior restoration efforts. The site is not considered plantable.

GRLA-05 (0.80 acres, tree-iage category 1)

This high-quality natural area consists mostly of black cottonwood and redcedar. The understory in this HMU is dominated by red-osier dogwood and Pacific ninebark. Invasive cover is low, comprised primarily of reed canary grass. Many native shrubs have been established through prior restoration efforts.

GRLA-6 is landscaped.

GRLA-7 and **-8** are open water.

HANNABROOK PARK – MAP 9

- Located at 5815 Brookridge Boulevard
- Park includes basketball courts, a grassy play area, and a 0.5-mile trail through the forested areas
- 6 total acres
- 4 Habitat Management Units

HANN-01 (2.53 acres, tree-iage category 6)

Located in the northwest corner of the park, this HMU serves as an overflow detention area and is sparsely populated by black cottonwood and red alder. The understory is dominated by noninvasive grasses and willow. Invasive cover is high and comprises Scotch broom, Himalayan blackberry, tansy ragwort, and evergreen blackberry. This site is considered plantable.

HANN-02 (1.22 acres, tree-iage category 3)

This forested area runs along the east side of the park. Crown closure is estimated to be 40%–69% and consists mostly of a young stand of black cottonwood, red alder, and Douglas-fir. The understory in this HMU is dominated by noninvasive grasses and willow. Invasive cover is high and comprises Scotch broom, Himalayan blackberry, tansy ragwort, and evergreen blackberry. This site is considered plantable.

HANN-03 and **HANN-04** are landscaped.

HARBORVIEW PARK – MAP 6

- Located at 1621 Mukilteo Boulevard along Possession Sound in the Harborview-Seahurst-Glenhaven neighborhood
- 16.57 total acres
- 7 Habitat Management Units

HARB-01 – Possible Acquisition (1.52 acres, tree-iage category 6)

Located on the southwest corner of the park, this forested area consists mostly of aging bigleaf maple and red alder with a small amount of Douglas-fir. Crown closure is 10%–39%. The slope runs down to the railway at 40 degrees and has 100% invasive plant cover consisting mainly of Himalayan blackberry and Scotch broom. Other invasives found on this site include Bohemian knotweed, evergreen blackberry, and reed canary grass. This site is considered plantable.

HARB-02 – Possible Acquisition (2.22 acres, tree-iage category 9)

Located east of HARB-01, this natural area has 100% invasive plant cover dominated by Himalayan blackberry and Scotch broom. Additional invasives include Bohemian knotweed, evergreen blackberry, and reed canary grass. There are no mature overstory trees present on this site, but a small number of regenerative black cottonwood and red alder are present, with less than 10% crown closure. This site is plantable and would require intensive weed management and site preparation.

HARB-03 – Possible Acquisition (5.05 acres, tree-iage category 5)

Located on the north side of the park, this medium-quality canopy consists mostly of mature bigleaf maple, red alder, and, to a lesser extent, western redcedar. Crown closure is 40%–69%. The understory is dominated by salmonberry and sword fern. Invasive cover is medium and comprises English ivy, Himalayan blackberry, morning glory, reed canary grass, and English laurel. English ivy cover is heavy in the northeast corner of the HMU. Overall, this site has nice trails and canopy cover, and is considered plantable.

HARB-04 (1.57 acres, tree-iage category 5)

Similar to HARB-03, this HMU is characterized by a medium-value canopy and nice trails throughout the site. Crown closure is 40%–69% and mainly consists of mature western redcedar and bigleaf maple. The understory is dominated by vine maple and sword fern. Invasive cover threat is medium and comprises English ivy, Himalayan blackberry, morning glory, and herb Robert. This site is not considered plantable.

HARB-05 is landscaped.

HARB-06 is hardscaped.

HARB-07 (Possible Acquisition) is hardscaped.

HOWARTH PARK – MAP 6

- Located at 1127 Olympic Boulevard
- Includes hiking and walking trails, tennis courts, the Lewis and Clark Native Garden, an off-leash dog area, and a railroad overpass to access the beach; Pigeon Creek #2 transects this site
- 28 total acres
- 10 Habitat Management Units

HOWA-01 (0.50 acres, tree-iage category 2)

This HMU is accessed via the railway pedestrian overpass and includes a small, sparsely wooded natural area running along the shoreline. The dominant trees include black cottonwood and grand fir. The understory is dominated by noninvasive grasses and Scotch broom. Invasive cover threat is medium and comprises Scotch broom, Himalayan blackberry, and morning glory. The site is considered plantable. The soils on this site are particularly sandy, and the tree growth is limited.

HOWA-02 (9.49 acres, tree-iage category 5)

This forested HMU runs down the middle of the park adjacent to Olympic Boulevard and curves to the north adjacent to the shoreline. A stream outlet runs through this site, flowing out to the Sound. The dominant overstory trees include red alder and bigleaf maple, with a crown closure of 40%–69%. However, there is dieback of the crown of "overmature" red alder. Also, the conifer crown has low vigor, with less than 40% of the crown living. The understory in parts of this HMU is dominated by salmonberry and sword fern. Along the stream, in the area adjacent to the lower parking lot, the primary species found include willow and red-osier dogwood. The site is considered plantable.

HOWA-03 (8.19 acres, tree-iage category 8)

This HMU is classified as natural area, but lies in the area along Olympic Boulevard that was recently cleared by the city due to tree health issues. Although there is no canopy cover, the understory plant community is relatively intact and is dominated by salmonberry and sword fern. The invasive cover threat is medium and comprises Himalayan blackberry, reed canary grass, and morning glory. With the loss of the tree canopy, this site will be more susceptible to an increase in invasive plant encroachment and erosion. Monitoring and maintenance of this area will be of high importance. The site is scheduled for replanting by the city.

HOWA-04 (3.51 acres, tree-iage category 5)

This HMU encompasses a unique forested gulch with a trail leading from the park's landscaped area down stairs leading to a trail along Pigeon Creek #2. Crown closure is greater than 70% and consists mostly of bigleaf maple, red alder, and, to a lesser extent, Douglas-fir. The understory is dominated by salmonberry and sword fern. Invasive cover threat is medium and comprises Himalayan blackberry, reed canary grass, morning glory, English ivy, and English holly. The average slope across the site is 31 degrees and would benefit from some interplanting along the slopes above the creek to help control erosion.

HOWA-05 (1.15 acres, tree-iage category 2)

This high-quality canopy is located on the southwest corner of the park adjacent to the shoreline. Crown closure is greater than 70% and consists mostly of Douglas-fir, bigleaf maple, and red alder. The understory is dominated by salmonberry and salal. Invasive cover threat is medium and comprises English ivy, Himalayan blackberry, English holly, English laurel, and reed canary grass. There is a small patch of young red alder and brush that could indicate past disturbance, such as a landslide. This site is considered plantable.

HOWA-06 (4.19 acres, tree-iage category 5)

This forested area is located just above the newly cleared site along the road in HOWA-3. Crown closure is 40%–69% and consists mostly of bigleaf maple, red alder, and some Douglas-fir. The understory in this HMU is dominated by salmonberry and sword fern. There is some crown dieback occurring on some of the "overmature" red alders. The conifer crown has low vigor, with less than 40% of the crown living. Invasive cover threat is medium and comprises Himalayan blackberry, reed canary grass, morning glory, English ivy, and English holly. The site is considered plantable.

HOWA-07 is open water.

HOWA-08 is hardscaped.

HOWA-09 and **-10** are landscaped.

JOHNSTON KELLY PARK – MAP 5

- Located at 4301 Basswood Drive in the View Ridge neighborhood
- 4.54 total acres
- 1 Habitat Management Unit

JOKE-01 (4.54 acres, tree-iage category 5)

The park was formerly an old dumping ground, but was adopted by community members who have lead trail restoration and development of a native plant garden and outdoor classroom. The forest here has mixed conifer/deciduous canopy consisting of middle-aged Douglas-fir, red alder, and some western hemlock. Crown closure is 40%–69%. The primary regenerative species include bigleaf maple and red alder. The understory is dominated by salmonberry and sword fern. Invasive cover is medium in this HMU and comprises Himalayan blackberry, morning glory, English laurel, reed canary grass, and European mountain ash. Much work has been put into this park, but it would greatly benefit from continued invasive removal work, maintenance, and plantings.

KASCH PARK – MAP 11

- Located in South Everett near The Boeing Company on 8811 Airport Road
- In addition to forested areas with trails, the park includes an athletic center featuring a softball complex, two Little League fields, and soccer fields with synthetic turf
- 60 total acres
- 6 Habitat Management Units

KASC-01 (5.18 acres, tree-iage category 4)

Located on the north end of the park adjacent to the soccer fields, this HMU has developed trails throughout. This primarily deciduous forest stand consists of red alder and black cottonwood, with some Douglas-fir. Crown closure is 40%–69%. The conifer crown has low vigor, with less than 40% of the crown living. The native understory is dominated by salmonberry and salal. Invasive cover threat is low and comprises Himalayan blackberry, English holly, evergreen blackberry, reed canary grass, and Scotch broom. Most invasives are found near the western edges of the HMU. The site is not considered plantable.

KASC-02 (3.95 acres, tree-iage category 4)

This HMU is a forested wetland dominated by black cottonwood and willow. Crown closure is greater than 70%. The native understory is dominated by salmonberry and sedge. Invasive cover threat is low and comprises Himalayan blackberry, English holly, evergreen blackberry, reed canary grass, and Scotch broom. Most invasives are found near the edges of the HMU. The site is not considered plantable.

KASC-03 (4.70 acres, tree-iage category 1)

This HMU is a wetland dominated by hardhack spirea and willow. Invasive cover threat is low in this HMU, and comprises reed canary grass and Himalayan blackberry. This site is not considered plantable.

KASC-04 (5.02 acres, tree-iage category 4)

This HMU is a primarily deciduous forested area that runs adjacent to the softball complex. Crown closure is 40%–69% and consists mostly of red alder, black cottonwood, and Douglas-fir. The conifer crown has signs of low vigor, with less than 40% of the crown living. The native understory is dominated by salmonberry and salal. Invasive cover threat is low, with most of the invasives colonizing the forest edges; species include Himalayan blackberry, English holly, evergreen blackberry, reed canary grass, and Scotch broom.

KASC-05 is hardscaped.

KASC-06 is landscaped.

LANGUS RIVERFRONT PARK – MAP 2

- Located at 400 Smith Island Road adjacent to the Snohomish River
- Consists of a complex of young hardwood forest, isolated freshwater wetlands, and riparian scrub shrub vegetation; includes river access with a boat launch, fishing pier, shell house, and rowing dock; features a 3-mile paved trail used for walking, jogging, and biking
- Langus Park is included in Everett's Shoreline Master Program, which seeks to reconnect the wetlands to the Snohomish River in order to create lower-river off-channel salmon habitat; the Partnership will need to coordinate with stakeholders in this project before commencing restoration activities
- 96 total acres
- 19 Habitat Management Units

LANG-01 (5.69 acres, tree-iage category 6)

This HMU is riparian area on the northwest corner of the park and consists of a sparse canopy of aging black cottonwood and red alder. Invasive cover threat is high and comprises Himalayan blackberry, reed canary grass, Scotch broom, morning glory, and English holly. The site is considered plantable. Site includes dike road access.

LANG-02 (3.62 acres, tree-iage category 3)

This HMU is wetland area located on the northeast corner of the park adjacent to Interstate 5. Dominant vegetation includes noninvasive mixed grasses, hardhack spirea, and some regenerative willow species. Invasive cover is high throughout the wetland and comprises reed canary grass, Himalayan blackberry, Scotch broom, Canada thistle, and morning glory. The site is not considered plantable.

LANG-03 (6.72 acres, tree-iage category 3)

This HMU is forested wetland adjacent to Interstate 5 and south of LANG-2. Sparse overstory (less than 10% canopy closure) consists of black cottonwood and red alder with smaller regenerative alder and willow species. The native understory consists of cattail and hardhack spirea. However, invasive cover is high, with a pervasive cover of reed canary grass, Himalayan blackberry, Scotch broom, morning glory, and Canada thistle. The site is not considered plantable.

LANG-04 (8.39 acres, tree-iage category 6)

This HMU is forested wetland south of LANG-3. Sparse overstory (less than 10% canopy closure) consists of black cottonwood and red alder with small regenerative alder and willow species. The understory is dominated by noninvasive grasses and Himalayan blackberry. Invasive cover is high and comprises Himalayan blackberry, reed canary grass, Scotch broom, Bohemian knotweed, and morning glory. The site is considered plantable.

LANG-05 (6.15 acres, tree-iage category 9)

This HMU is a young hardwood forest with a few wet areas. Crown closure is less than 10% and consists mostly of red alder and black cottonwood. The understory is dominated by noninvasive grasses and Himalayan blackberry. Invasive cover is high and comprises Himalayan blackberry, reed canary grass, Bohemian knotweed, Scotch broom, and Canada thistle. The site is considered plantable.

LANG-06 (2.49 acres, tree-iage category 6)
This HMU is located along the shoreline of the Snohomish River on the southwest portion of the park. The canopy is characterized by young mixed conifer/deciduous trees, including shore pine, bigleaf maple, and western redcedar. Crown closure is 10%–39%. The understory is a mix of hardhack spirea and noninvasive grasses. Invasive cover is high and comprises reed canary grass, Himalayan blackberry, Scotch broom, and English holly. The invasive species could be removed and replaced with native plants and trees suited to wetter soil conditions.

LANG-07 (1.71 acres, tree-iage category 9)

This HMU has no canopy cover or regenerative trees but is a site that would support tree cover. The site is completely inundated with invasive species and nonnative grasses. Species include Scotch broom, Himalayan blackberry, reed canary grass, Bohemian knotweed, and Canada thistle. The east side of the HMU has 100% Scotch broom cover. This site could support species typical to a native forest but would need intensive site preparation and invasive species removal.

LANG-08 (0.81 acres, tree-iage category 6)

The HMU is characterized by young hardwood forest with some wet areas. Crown closure is 40%–69% and consists mostly of black cottonwood and red alder. The understory is dominated by noninvasive grasses and invasive species including Himalayan blackberry, reed canary grass, Scotch broom, Bohemian knotweed, and Canada thistle. The site is considered plantable.

LANG-09 (0.95 acres, tree-iage category 6)

This HMU has no canopy cover or regenerative trees, but is a site that would support tree cover. The understory consists of cattail and Himalayan blackberry. Invasive cover is high and comprises reed canary grass, Himalayan blackberry, Scotch broom, Bohemian knotweed, and Canada thistle. This site could support tree species that thrive in slightly wetter conditions, but would need intensive site preparation and invasive species removal.

LANG-10, -12, -14, and **-16** are open water.

LANG-13, -15, -17, -18 and **-19** are landscaped.

LANG-11 is hardscaped.

LOGANBERRY LANE – MAP 11

- Situated at the end of 18th Avenue West adjacent to Kasch Park in South Everett
- Wooded trails and off-leash dog area
- 10.03 total acres
- 3 HMUs

LOBE-01 (6.23 acres, tree-iage category 4)

This stand is bordered by Kasch Park to the west and a golf course to the east. It has a mixed forest canopy consisting of red alder, black cottonwood, and Douglas-fir. Crown closure is 40%–69%. The understory is dominated by salmonberry and salal, with regenerating Douglas-fir and red alder. Invasive cover is low and comprises Himalayan blackberry, English holly, evergreen blackberry, reed canary grass, and Scotch broom. Most invasive species are found along the forest edges. The conifer crown has low vigor, with less than 40% of the crown living. There is a developed trail system throughout the HMU. This site would benefit from invasive plant removal and interplanting with native conifers.

LOBE-02 (2.02 acres, tree-iage category 1)

This HMU is characterized as a shrub wetland dominated by hardhack spirea and willow. Invasive cover is low and comprises reed canary grass and Himalayan blackberry. This is not a site that would support a conifer stand or madrones. The shrub layer is considered to be high-quality. This site would benefit from the removal of invasive species and periodic monitoring in order to maintain the high quality of the wetland shrub vegetation.

LOBE-03 (1.78 acres, tree-iage category 6)

This HMU is characterized by a mature deciduous canopy. Crown closure is 40%–69% and consists mostly of red alder and black cottonwood. There is evidence of low vigor in the older red alder trees. The understory is dominated by salmonberry and reed canary grass, with some regenerating red alder and willow species. Invasive cover is high and comprises Himalayan

LOBE-03 continued

blackberry, reed canary grass, English holly, evergreen blackberry, and European mountain ash. The site is not considered plantable, but would greatly benefit from invasive plant removal.

LOWELL RIVERFRONT TRAIL – MAP 7

- Located on Lowell-Snohomish River Road along the Snohomish River
- 1.75-mile, multiuse trail features a 10-foot-wide paved path that includes views of Mount Baker, Mount Rainier, and the Cascades; trailhead is located just off Lenora Street
- 19.6 total acres
- 6 HMUs

LRFT-01 (2 acres, tree-iage category 3)

This forested wetland canopy consists of black cottonwood, red alder, and willow species. The canopy value is high given that this site would not support a full conifer canopy. The understory includes the native red-osier dogwood, but is dominated by invasive species, primarily reed canary grass. Other invasive species found on the site include Scotch broom, Himalayan blackberry, and evergreen blackberry. This site is considered plantable.

LRFT-02 (3.39 acres, tree-iage category 3)

This forested wetland canopy consists mostly of red alder, black cottonwood, and willow species. The understory in this HMU is dominated by reed canary grass and willow. The canopy cover value is high given the wet soil conditions, which would not support a full conifer canopy. Invasive cover is high and comprises reed canary grass, Himalayan blackberry, evergreen blackberry, and English holly. The site is considered plantable.

LRFT-03 and **-04** are landscaped.

LRFT-05 is open water.

LFRFT-06 is hardscaped.

MADISON/ MORGAN PROPERTY – MAP 9

- Located at 528 Madison Street in the View Ridge/Madison/ Evergreen neighborhood [J: 1 neighborhood?]
- 1.75 total acres
- 2 HMUs

MAMO-01 (1.11 acres, tree-iage category 3)

This high-value canopy consists of mature Douglas-fir, western redcedar, and red alder, with a crown closure of 40%–69%. The primary native understory species is salmonberry. However, with a high invasive cover threat, the understory is dominated by Himalayan blackberry, English ivy, reed canary grass, English holly, and morning glory. Invasive plant removal has already begun on this site and will benefit from continued stewardship. The site is considered plantable.

MAMO-02 is landscaped.

MERRILL CREEK – MAP 10

- Located on Merrill Parkway; Merrill and Ring Creek runs through the site and drains into Possession Sound
- 9.66 total acres
- 2 HMUs

MECR-01 (7.34 acres, tree-iage category 5)

This HMU is characterized by a young hardwood stand with scattered conifers. Crown closure is greater than 70% and consists mostly of red alder, black cottonwood, and Douglas-fir. Regenerative trees present in the site include red alder and western

MECR-01 continued
hemlock. The understory is dominated by noninvasive grasses and sword fern. Invasive cover threat is medium and comprises Himalayan blackberry, reed canary grass, Scotch broom, English holly, and evergreen blackberry. The site is not considered plantable but would benefit from invasive species removal.

MECR-02 is landscaped.

PHIL JOHNSON BALLFIELDS –MAP 10

- Located at 400 W. Sievers-Duecy Boulevard in South Everett
- A complex of forest alongside ball fields, a restroom/concession building, landscaping, a plaza, parking, and a children's play area
- 13 total acres
- 3 HMUs

PHJO-01 (2.80 acres, tree-iage category 6)

This HMU is a steep slope above landscaped PHJO-03 and hardscaped PHJO-02 and consists of a young mixed canopy stand. Crown closure is greater than 70% and is dominated by red alder with some Douglas-fir. The understory is dominated by non-invasive grasses and sword fern. Invasive cover is high and comprises Himalayan blackberry, reed canary grass, Scotch broom, tansy ragwort, and evergreen blackberry. The site is not considered plantable. Greater than 1% of the ground is bare soil caused by recent disturbance or erosion.

PHJO-02 is hardscaped.
PHJO-03 is landscaped.

POWDER MILL GULCH – MAP 8

- Located at 59th Avenue SW near the Stratton Hills neighborhood
- Powder Mill Creek runs through this site
- 18.91 total acres
- 9 HMUs

POMI-01 (4.74 acres, tree-iage category 4)

Located in the northeast corner of the park, this HMU consists of a medium-value, mature mixed canopy of bigleaf maple and Douglas-fir. Regenerating trees on the site include red alder and western redcedar. The conifer crowns shows signs of low vigor, and the aging red alders on the site have crown dieback. Native understory species include salmonberry and sword fern. Invasive cover threat on the site is low and comprises Himalyan blackberry, reed canary grass, English ivy, English holly, and evergreen blackberry. Streamside erosion is a problem at this site.

POMI-02 (3.12 acres, tree-iage category 6)

This medium-value canopy consists primarily of young bigleaf maples and Douglas-fir. The canopy closure is 10%–39%. There is evidence of low vigor in the conifer trees on the site. Regenerative trees include red alder and willow species. In areas without adequate tree cover, there is significant stream erosion and failing slopes of the sandy soils. The top two understory species are salmonberry and trailing blackberry. Invasive cover threat is high on this site and comprises Himilayan blackberry, English ivy, evergreen blackberry, English holly, and herb Robert. The site is considered plantable. Slope stabilization and erosion control plantings will be a focus here.

POMI-03 (8.14 acres, tree-iage category 5)

This mixed forest stand consists primarily of bigleaf maple and western hemlock. Canopy closure is 40%–69%. Conifers show signs of low vigor, and there is crown dieback in the aging red alders on the site. Invasive cover threat is medium and comprises Himilayan blackberry, evergreen blackberry, English Ivy, yellow archangel, and English holly. Invasives cover the entire south edge of the steep slope below the road and homes, and also north of the 58th Street SW turnaround. The site is considered plantable.

POMI-04 (0.49 acres, tree-iage category 2)

This high-value conifer stand consists of western hemlock and western redcedar. Regenerative trees include western redcedar and red alder. Crown closure is 40%–69%. The conifer crown has signs of low vigor, with less than 40% of the crown living. There is also some dieback in aging red alders. Primary understory species include salmonberry and sword fern. Invasive cover threat on this site is medium, with highest numbers along the west edge of the HMU. Invasive species include Himilayan blackberry, yellow archangel, evergreen blackberry, reed canary grass, and herb Robert. This site is considered plantable.

POMI-05 (1.44 acres, tree-iage category 4)

This forested area is located south of 59th Avenue SW. The medium-value canopy is a mature, primarily decidous stand. Crown closure is greater than 70% and consists mostly of red alder, bigleaf maple, and western hemlock. The red alders in the gulch below the housing area are mature and aging with some dieback. The understory is dominated by salmonberry and Indian plum. Invasive cover is low and comprises Himalayan blackberry, reed canary grass, evergreen blackberry, English holly, and herb Robert. The site is not considered plantable. The conifer crown has low vigor, with less than 40% of the crown living.

POMI-06, -07, -08 and **-09** are landscaped.

RIVERSIDE – MAP 4

- Located on the corner of Everett Avenue and E. Grand Avenue
- 0.16 acre
- 2 HMUs

RISI-01 (.04 acres, tree-iage category 9)

This HMU has no canopy cover or regenerative native trees. The invasive cover threat is high, with an understory dominated by Himalayan blackberry and reed canary grass. Other invasives include reed canary grass and English holly. The site is considered plantable, and with appropriate invasive plant mangement and site preparation, it could support a full conifer canopy.

RISI-02 is landscaped.

ROTARY PARK – MAP 7

- Located at 3505 Lowell-Snohomish River Road, on the banks of the Snohomish River in the Lowell neighborhood
- Park includes a boat launch, walking trails, and picnic areas
- 16.5 acres
- 6 HMUs

ROTA-01 (1.57 acres, tree-iage category 3)

This HMU is characterized as a high-value forested wetland. Crown closure is 10%–39% and consists mostly of red alder, black cottonwood, and willow species. Regenerative trees include willow species and sitka spruce. The understory is dominated by reed canary grass and red-osier dogwood. Invasive cover is high and comprises reed canary grass, Himalayan blackberry, and evergreen blackberry. Invasive cover is particularly high along the shoreline with reed canary grass. The site is not considered plantable.

ROTA-02 (5.62 acres, tree-iage category 3)

This HMU contains high-value forested wetland canopy. Crown closure is 10%–39% and consists mostly of red alder, black cottonwood, and willow species. Regenerative trees include red alder and willow species. Soil conditions on this site are wet throughout with a preponderance of reed canary grass and willow dominating the understory. In addition to reed canary grass, invasive species include Himalayan blackberry, evergreen blackberry, and English holly. The site is considered plantable.

ROTA-03 (4.39 acres, tree-iage category 3)

Located on the east side of the park, this HMU is similar to ROTA-02 with wet conditions throughout and high-quality wetland forest canopy. Crown closure is 10%–39% and consists mostly of red alder, black cottonwood, and willow species. Native

ROTA-03 continued
understory includes willow. However, this wet site is dominated by reed canary grass and other invasives, including Himalayan blackberry, evergreen blackberry, and English holly. This site is considered plantable.

ROTA-04 is landscaped.

ROTA-05 and **-06** are hardscaped.

THORNTON A. SULLIVAN PARK – MAP 12

- Located at 11405 W. Silver Lake Road on the northwest side of Silver Lake in South Everett
- Includes forested trails, swimming, picnic areas, playgrounds, and summer day camp at Camp Patterson
- 35.3 total acres
- 7 HMUs

THSU-01 (3.18 acres, tree-iage category 2)

Located in the northeast corner of the park, this HMU is high-value mixed canopy consisting of Douglas-fir, western redcedar, and bigleaf maple. Crown closure is 40%–69%. Regenerative trees include western redcedar and bigleaf maple. The understory is dominated by sword fern and salal. Invasive cover threat is medium and comprises English ivy, Himalayan blackberry, English laurel, English holly, and herb Robert. The site is considered plantable in the southern area near the buildings after removal of the Himilayan blackberry.

THSU-02 (0.39 acres, tree-iage category 9)

This HMU includes a patch of invasives between 14th Avenue and Interstate 5. There is no canopy on this site, and it is completely inundated with invasive species, including Himalayan blackberry, Scotch broom, Bohemian knotweed, and bull thistle. The site would not be plantable until extensive weed management and site preparation could occur.

THSU-03 (5.74 acres, tree-iage category 2)

This HMU has a high-value mature mixed canopy consisting of Douglas-fir, western redcedar, and bigleaf maple. Crown closure is 40%–69%. Openings in the canopy are caused by western hemlock annosus root or butt rot disease. In addition, there is evidence of low vigor in parts of the conifer canopy. Regenerative trees include western redcedar and western hemlock. The understory is dominated by salmonberry and sword fern. Invasive cover threat is medium and comprises Himalayan blackberry, evergreen blackberry, English holly, English laurel, and reed canary grass. The site is not considered plantable overall, but would benefit from invasive species removal and interplanting with disease-resistant conifers and native understory.

THSU-04 (1.37 acres, tree-iage category 5)

This is a young mixed stand dominated by red alder, bigleaf maple, and western white pine. Regenerative trees include western redcedar and western hemlock. Crown closure is greater than 70%, but the conifer crown shows signs of low vigor. The understory is dominated by salmonberry and sword fern. Invasive cover threat is medium, particilarly near the south end of the HMU adjacent to homes. Invasive species include Himalayan blackberry, evergreen blackberry, English holly, yellow archangel, and English ivy.

THSU-05 (0.88 acres, tree-iage category 2)

This HMU is enclosed by a locked fence on the southwest tip of the park adjacent to Silver Lake Drive. Crown closure is 40%–69% and consists primarily of mature Douglas-fir, western redcedar, and bigleaf maple. Regenerative trees include western redcedar and red alder. There is some evidence of laminated root rot on some of the Douglas-firs. The understory is dominated by sword fern and salal. Invasive cover threat is medium and comprises Himalayan blackberry, morning glory, evergreen blackberry, English ivy, and English holly. Invasive cover is heaviest along the south edge adjacent to the residential area, where yard waste dumping has occurred. The site is not considered plantable.

THSU-06 is hardscaped.

THSU-07 is landscaped.

VIOLA OURSLER VIEWPOINT – MAP 1 and 2

- Located at 721 E. Marine View Drive in North Everett with views of the Snohomish River
- 2 acres
- 2 HMUs

VIOU-01 (0.61 acres, tree-iage category 9)

This HMU has low canopy-cover value with a sparse stand of bigleaf maple. The understory does include some Indian plum, but is dominated by Himalayan blackberry, English ivy, Bohemian knotweed, morning glory, and reed canary grass. Himalayan blackberry is heaviest along the east portion of the HMU adjacent to the train tracks. The site is considered plantable and could support a full conifer canopy. Some clearing has already begun on this site.

VIOU-02 is landscaped.

Appendix D. Primary and Secondary Overstory Species by Size Class and HMU Acres

	Primary Overstory Species					Secondary Overstory Species				
	Size Class (DBH) *				HMU Acres	Size Class (DBH)				HMU Acres
Common Name	0–5"	6–10"	11–20"	21+"		0–5"	6–10"	11–20"	21+"	
Bigleaf maple		11	44	59	114	1	6	56	35	98
Red alder	18	32	50	1	101	19	13	85		117
Shore pine			2		2					
Black cottonwood	7	12	8	10	37		13		33	46
Douglas-fir				72	72	3		2	13	18
Western redcedar				2	2			1	27	28
Grand fir								1		1
Ponderosa pine								4		4
Willow							7			7
Western hemlock								10		10

** DBH: refers to the tree "diameter at breast-height"*

Appendix E. Primary and Secondary Understory Species by HMU Acres

Primary Understory Species	HMU Acres
Salmonberry	187
Sword fern	52
Mixed grasses-noninvasive	34
Himalayan blackberry *	20
Reed canary grass *	17
Creeping blackberry	14
Salal	11
Hardhack spirea	10
Cattail	8
Vine maple	2
Red-osier dogwood	1

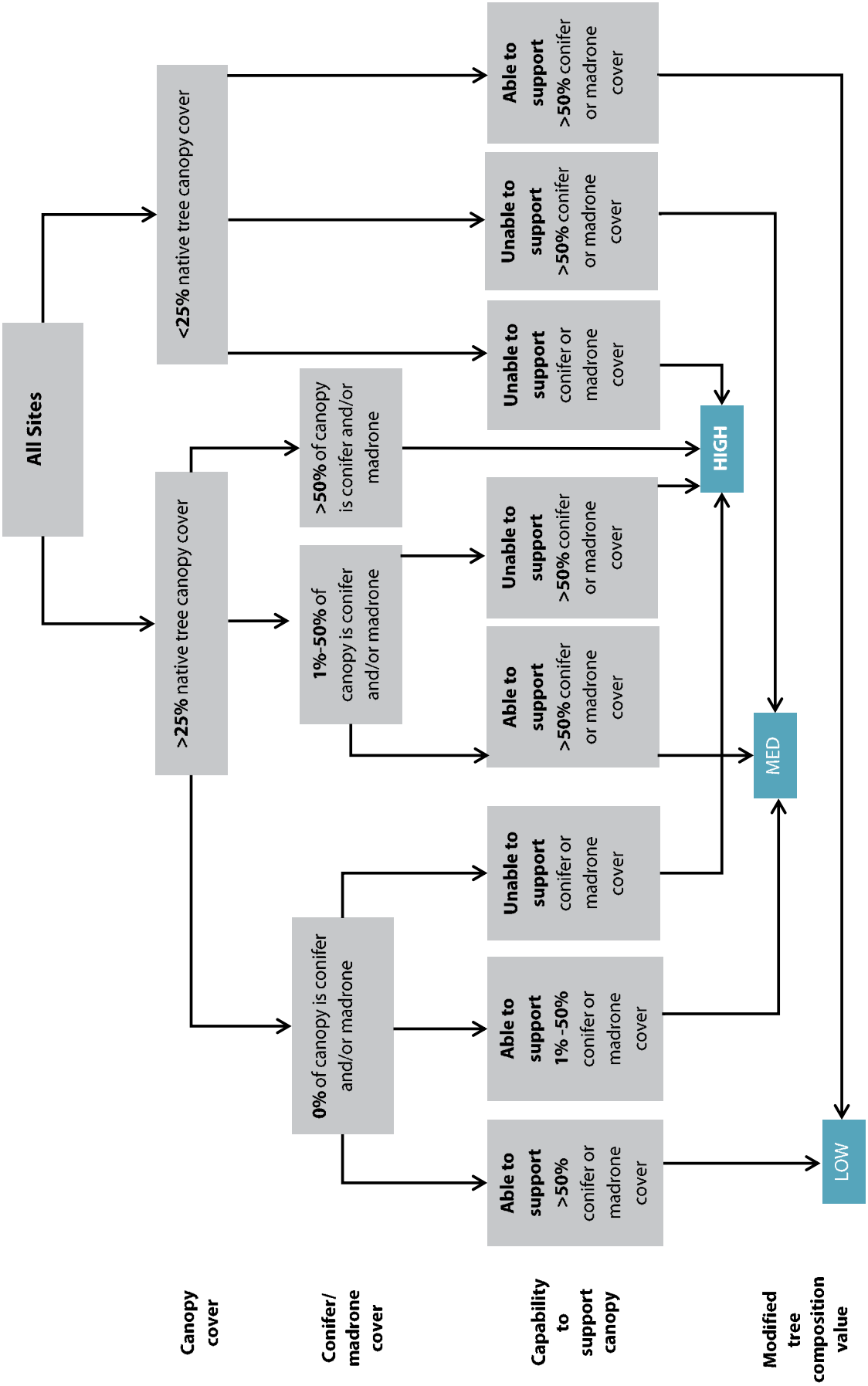
** Invasive species*

Secondary Understory Species	HMU Acres
Sword fern	135
Salal	35
Salmon berry	32
Himalayan blackberry *	26
Willow	24
Vine maple	17
Elderberry	15
Creeping blackberry	11
Low oregon grape	11
Hardhack spirea	10
Mixed grasses-noninvasive	9
Scotch broom *	6
Indian plum	6
Morning glory *	4
Sedge	4
Red-osier dogwood	4
Reed canary grass *	2
Pacific ninebark	1

Appendix F. Most Common Invasive Species by HMU Acres

Invasive Species	HMU Acres
Himalayan blackberry	353
English holly	272
English ivy	232
Reed canary grass	230
Morning glory	128
Evergreen blackberry	101
English laurel	101
Herb Robert	93
Scotch broom	80
Bohemian knotweed	33
Yellow archangel	32
Canada thistle	20
European mountain ash	17
Tansy ragwort	7
Evergreen clematis	3

Appendix G: Forest Landscape Assessment Tool (FLAT) Flow Chart



Appendix H: Short- and Long-Term Strategic Plan and Benchmarks

Short-Term Strategic Plan Benchmarks 2013–2017

	2013	2014	2015	2016	2017
FIELD	Enroll 2 acres in initial restoration	Enroll 3 acres in initial restoration and continue restoration on 2 acres	Enroll 5 acres in initial restoration and continue restoration on 5 acres	Enroll 10 new acres in initial restoration and continue restoration on 10 acres	Enroll 15 new acres in initial restoration and continue restoration on 20 acres
	Create stewardship plans for Howarth, Thornton A. Sullivan, and 4 additional priority parks	Evaluate need and resources to determine use of CEDAR online database Create stewardship plans for 2 additional parks	Create stewardship plans for 2 additional parks	Create stewardship plans for 2 additional parks	Create stewardship plans for 3 additional parks
	Set up on-site storage and tool supply for Howarth, Thornton A. Sullivan, and 4 additional priority parks	Develop field-monitoring plan to track on-the-ground restoration progress and # of acres entering into Phase-4 work	Monitor progress	Monitor progress	Monitor progress and report # of acres entered into Phase-4 work
	Evaluate and prioritize 4 more parks	Evaluate and prioritize 2 more parks	Evaluate and prioritize 2 more parks	Evaluate and prioritize 2 more parks	Evaluate and prioritize 3 more parks
	Begin working with staff on BMPs	Seek feedback on BMPs from staff and volunteers; evaluate and update as necessary	Seek feedback on BMPs from staff and volunteers; evaluate and update as necessary	Seek feedback on BMPs from staff and volunteers; evaluate and update as necessary	Seek feedback on BMPs from staff and volunteers; evaluate and update as necessary

COMMUNITY	Recruit and manage ~900 volunteer hours Host and publicize at least 10 work parties	Recruit and manage ~1,500 volunteer hours Host and publicize at least 15 work parties Plan and host first Green Everett Day Host volunteer appreciation event	Recruit and manage ~2,500 volunteer hours Host and publicize at least 20 work parties Host Green Everett Day Host volunteer appreciation event	Recruit and manage ~5,000 volunteer hours Host and publicize at least 25 work parties Host Green Everett Day Host volunteer appreciation event	Recruit and manage ~7,800 volunteer hours Host and publicize at least 25 work parties Host Green Everett Day Host volunteer appreciation event
	10 active forest stewards supporting at least 6 priority parks Create volunteer-tracking database	15 active forest stewards supporting at least 8 priority parks	20 active forest stewards supporting at least 10 priority parks	25 active forest stewards supporting at least 12 priority parks	30 active forest stewards supporting at least 15 priority parks

Short-Term Strategic Plan Benchmarks 2013–2017 (continued)

	2013	2014	2015	2016	2017
COMMUNITY (CONTINUED)	Host 1 orientation for new forest stewards Host at least 3 trainings for existing forest stewards	Host 1 orientation for new forest stewards Host at least 3 trainings for existing forest stewards	Host 1 orientation for new forest stewards Host at least 3 trainings for existing forest stewards	Host 1 orientation for new forest stewards Host at least 3 trainings for existing forest stewards	Host 1 orientation for new forest stewards Host at least 3 trainings for existing forest stewards
	Develop brochure, restoration site signs, and other branded outreach and promotional items Publicize in local media (involvement-focused)	Develop outreach kit and kiosk poster Media campaign focused on success stories and branding	Media outreach focused on success stories involving forest stewards, volunteers, and corporate participation Work with schools to develop youth steward opportunities	Media outreach focused on benefits and ecosystem services provided by healthy urban forests Evaluate youth steward opportunities and adapt as necessary	Media outreach focused on outcomes from first 5 years
RESOURCES	Identify and pursue various funding sources	Identify and pursue various funding sources	Identify and pursue various funding sources	Identify and pursue various funding sources	Identify and pursue various funding sources
	Recruit at least 2 local businesses to contribute or volunteer with Green Everett	Develop corporate and local business engagement plan	Implement corporate engagement plan; 5 businesses supporting forest steward projects and at least 1 sponsorship	Evaluate corporate engagement plan and adapt as necessary; 8 businesses supporting forest steward projects and at least 2 sponsorships	Expand the Green Everett Partnership to include organizations and groups that can assist with the achievement of the 20-year plan's vision
ADMINISTRATION	Begin planning for long-range management structure		Finalize plans for management structure	Establish working Community Advisory Committee and Management Team	
	Publish and distribute 20-year management plan	Write 2013 annual report	Write 2014 annual report	Write 2015 annual report	Write 2016 annual report
	Develop 2014 work plan	Develop 2015 work plan	Develop 2016 work plan	Develop 2017 work plan	Develop 2018 work plan

Appendix H continued: Short- and Long-Term Strategic Plan and Benchmarks

Long-Term Strategic Plan Benchmarks 2018–2032

	2018–2022	2023–2027	2028–2032
FIELD	Enroll 20–30 new acres in initial restoration per year	Continue enrollment of 30 new acres in initial restoration per year	Enroll remaining 29 acres. All acres in restoration by 2029.
	Continue restoration and maintenance on all previously enrolled acres Update forest assessment to include land added to the management of parks	Continue restoration and maintenance on all previously enrolled acres Update forest assessment to include land added to the management of parks.	Continue restoration and maintenance on all previously enrolled acres
COMMUNITY	An active forest steward group working in 75% of project areas	An active forest steward group working in 100% of project areas	Continue program with active forest stewards in all project areas
	Recruit and manage ~18,000 volunteer hours per year by 2022	Recruit and manage ~19,000 volunteers hours per year by 2027	Recruit and manage ~18,000 volunteer hours in 2028. Hours needed to support restoration efforts decrease as all acres are entered into restoration. Sustain at least ~2,000 volunteer hours per year to monitor and maintain all 354 acres in restoration by 2032
RESOURCES	Reevaluate BMPs and program costs based on first 5 years of fieldwork	Evaluate and update methodology	Evaluate and update methodology
	Costs projected at $2 million total for 5 years	Costs projected at $2.4 million total for 5 years	Costs projected at $1.3 million total for 5 years
	Establish public funding base	Sustain public funding base	Ensure proper funding base for long-term maintenance and monitoring of all acres once 20-year plan is completed
ADMINISTRATION	Create 5-year implementation plan	Revise 5-year implementation plan Develop and deliver to the community a midplan status report	As appropriate, expand the Forest Steward Program to city-owned land under the management of others. Complete 20-year progress report

Appendix I: Public Input

The following is a summary of information provided by those who attended the Green Everett Partnership open house and completed a survey conducted in Everett, November 2012:

Which Everett forested park do you visit most frequently?

- Forest Park
- Lowell Riverfront Trail
- Howarth Park
- Garfield Park
- Grand Avenue Park
- Langus Riverfront park
- Lowell Park
- Madison/Morgan Property
- 5th Avenue
- Bayside Neighborhood Park

What activities do you enjoy while visiting these parks?

Theme:

- Walking and hiking
- Enjoying nature
- Bird-watching
- Trees and other plants
- Water features
- Trails
- Emotional well-being
- Picnics
- Meetings and events (weddings)
- Playground

In addition to the scientific forest assessment, what factors are important to consider when prioritizing the work of the Green Everett Partnership? (Listed in order of importance.)

- High habitat value
- Highly visible to the public
- Safety of park users
- Already has a forest steward or volunteer commitment in place
- Existing funding
- Proximity to public transit

Why do you think forest restoration is important?

Theme:

- Livability of the city/ quality of life
- Wildlife habitat
- Healthy native plant communities
- Emotional well-being
- So it is still the Pacific Northwest 50–100 years from now
- Filter air pollution
- Long-term forest sustainability
- Watershed health
- Public education (for both adults and youth)
- Accessible connection to nature
- Combat climate change
- Property values
- General environmental benefit
- Clean water
- Salmon populations
- Community pride
- Recreation

Appendix J: Glossary

Adaptive Management
A structured, repeating process of decision making aimed at better understanding a management system through monitoring, evaluation, and development of new management strategies. The Green Everett Partnership will utilize an adaptive management strategy to inform its administrative and restoration practices over time.

Balanced Scorecard
A strategic planning and management tool developed to measure both financial and nonfinancial performances against strategic goals. Everett's balanced scorecard measures the performance across three key elements: fieldwork, community, and resources.

Butt Rot
A fungal disease that affects conifers, including Douglas-fir, spruce, and hemlock. The fungus attacks the "buttress," or the tree trunk's broadened base, where the trunk meets the soil. The fungus moves up into the trunk's interior, creating a column of rotted plant matter. It reduces the trunk's structural integrity and makes the tree more vulnerable to toppling. The most obvious sign of the fungus is a distinctive conk that usually appears on or near the tree. One species of fungus associated with butt rot is *Phaeolus schweinitzii*.

Canopy Cover
The percent of a forest floor or specific geographic area covered by tree crowns. Assessed using aerial orthophotographs as well as ground-based techniques, it can be used for all trees in a given geographic area or specific tree species. Canopy cover has been shown to be an important ecological indicator used for distinguishing plant and animal habitats as well as assessing on-the-ground conditions in urban areas. The canopy cover of Everett's forested parkland was assessed using aerial orthophotographs followed by on-the-ground field verification.

CEDAR
Stands for "CEntralized DAta Repository." An online data portal used by volunteers, staff, and partners in the Green Cities Network to advertise events, track volunteer hours, and report on urban forest restoration activities (e.g., square feet of invasive plants removed and number of native plants installed).

Conifers
Cone-bearing trees, most of which are evergreen, with needle or scalelike leaves. Examples include pine, fir, hemlock, and spruce. The dominant conifers found in Everett's urban forest include Douglas-fir, western redcedar, and western hemlock.

Crown Closure
Canopy closure is the proportion of the sky that is obscured by leafy vegetation when viewed from a single point on the ground, looking up. Closure is affected by tree heights and tree canopy widths and takes into account light infiltration into the understory. Canopy closure is a data measurement in the Forest Landscape Assessment Tool (FLAT) used to categorize Everett's forested parkland for the 20-Year Plan.

Deciduous
A tree or shrub that loses its leaves or needles during the fall and winter months (in contrast to an evergreen plant). Examples found in Puget Sound forests include bigleaf maple, red alder, and snowberry.

Ecosystem
The interactive community or relationships of living (biotic) organisms such as plants, animals, and microbes with nonliving (abiotic) components such as air, water, soils, and weather.

Forest Restoration
Actions and management to reestablish or enhance processes that support a healthy forest's structure, ecological functions, and biodiversity levels. Restoration actions may include removal of nonnative invasive plants, applying mulch, and planting native trees, shrubs, and ground cover. In an urban environment, the natural ecological processes may never be fully restored. Therefore, forests will need ongoing management with long-term maintenance and monitoring.

Green Cities Network
The combined regional group of Green City Partnerships, which currently includes Seattle, Kirkland, Tacoma, Redmond, Kent, and Everett. The Network is not a formally defined entity; rather, it is made up of the city partners, Forterra staff, other nonprofits, and participating volunteers who contribute to achieving the goals of each Green City. Network participants are invited to share best management practices, current relevant research, and funding opportunities.

Green City Partnership
A public-private venture between a local municipality (e.g., parks departments, public works, utilities, and other government agencies), community groups, and Forterra. The vision of each Green City Partnership is to create a healthy, livable city with sustainable urban forests and natural areas that connect people to nature through community-based stewardship.

Greenspace
A protected area of undeveloped landscape such as grass, trees, or other vegetation set apart for recreational, aesthetic, or ecological purposes. In the context of the 20-year plan, greenspace refers specifically to lawns, greenbelts, meadows, wetlands, and forests within the city of Everett.

HMU (Habitat Management Unit)
A defined geographic area or forest stand within a park characterized by the vegetation type or conditions present. Forest stands within Everett parks were delineated into HMUs based on one of five categories: forested, natural (nonforested), open water, hardscaped, or landscaped. HMUs were then further designated based on tree-iage category described on page 25 of the 20-year plan.

Invasive plants
Introduced nonnative plant species with traits that allow them to thrive outside their natural range and outcompete native plants. Invasive plants are typically adaptable and aggressive, with high reproductive capacity, and likely to cause economic and/or environmental harm.

Laminated Root Rot
A fungal root infection caused by *Phellinus weirii*, a parasitic fungus that can thrive in both living and dead roots of some conifers for extended periods of time. Douglas-fir is highly susceptible to this pathogen, along with true firs such as grand fir. Western redcedar is resistant to infection, and deciduous species are immune. Symptoms include reduced terminal growth, followed by yellowing and thinning of the tree crown.

Madrone
Arbutus menziesii (aka Pacific madrone, madrona) is a broadleaf evergreen tree native to western North America, particularly to Puget Sound lowland forests. The bark is a rich orange-red color that when mature naturally peels away in thin sheets, leaving a smooth greenish appearance. The Pacific madrone is in decline, especially in urban areas, and is a difficult species to reestablish. The species offers important habitat and supports a unique plant community often found on drier slopes along shorelines, or in areas with sandy or rocky, well-drained soils.

Mechanical Tree Failure
Refers to the breakage of tree trunks and branches and the uprooting of trees caused by factors such as high winds, old age, parasites, and disease.

Mulch
A protective covering, usually of organic matter such as leaves, straw, bark, or wood chips, placed around plants to prevent weed growth, moisture evaporation, and the freezing of roots. Covering the ground with mulch is a maintenance practice used in urban forest restoration following invasive plant removal and native plant installation.

Natural Area
Undeveloped land, consisting of native and nonnative vegetation, that is not maintained as an ornamental landscape, and where normal ecological cycles proceed. Natural areas can be public or private land. The forest assessment conducted for the 20-year plan defines natural areas as those HMUs with less than 25% tree cover, in contrast to “Forested Areas,” which have more than 25% tree cover.

Orthophotograph
An aerial photograph that has been adjusted for topographic relief, lens distortion, and camera tilt. It can be used to measure true distances, because it is an accurate representation of the Earth's surface, and is often used with geographic information systems (GIS).

Overstory
The uppermost layer of branches and foliage that forms the forest canopy. Common overstory trees found in Puget Sound forests include Douglas-fir, western redcedar, western hemlock, and bigleaf maple.

Photosynthesis
A process used by plants and some algae to convert light energy from the sun, carbon dioxide, and water into carbohydrates that provide sustenance for those organisms. Photosynthesis takes place in the chloroplast cells of leaves. The primary by-product of photosynthesis is oxygen.

Riparian
Pertains to the area along the banks of a river, stream, or lake.

Runoff
Runoff refers to unfiltered rainwater that reaches nearby water bodies by flowing across impervious surfaces such as roads, parking lots, driveways, roofs, and even compacted soils in landscapes. When the landscape is undeveloped or soils are not compacted, rainwater soaks into forest and meadow soils, where it is filtered by natural processes, slowly feeding into underground aquifers, streams, and lakes. The filtration process removes pollutants such as motor oils, gasoline, fertilizers, and pesticides. Forested parklands in Everett assist in reducing stormwater runoff entering Possession Sound, the Snohomish River, and Everett's other streams and wetlands.

Scrub Shrub
A forested wetland classification that includes areas dominated by woody vegetation less than 6 meters (20 feet) tall. The species present include willow, red-osier dogwood, and hardhack spirea.

Seep
A place where water (usually groundwater) reaches the earth's surface, forming moist areas or puddles. Seeps are important habitat for small mammals, birds, and butterflies.

Stocking
Term used in forestry practices to describe the number, basal area (diameter at breast height), or volume of trees present per acre of a forest stand, compared with the desired number of trees for optimum growth or health. Described in comparative terms, such as overstocked (too many trees per acre), poorly stocked, or well stocked.

Stormwater Runoff — see Runoff.

Tree Canopy
The uppermost layer of the forest, formed by leaves and branches of dominant tree crowns. The tree canopy forms the forest overstory.

Tree Canopy Vigor
Vigor refers to a tree's active, healthy growth. Plants with "low tree canopy vigor" have stunted growth, premature leaf drop, late spring-leaf development, sparse foliage, light green or yellow foliage, twig and branch dieback, or other abnormal symptoms. A combination of factors (e.g., flooding, shifts in environmental conditions, or physical damage) reduces a tree's vigor. Stress on a tree can make it vulnerable to diseases and insects that accelerate its decline.

Understory
The vegetation that grows below the forest canopy. Understory plants consist of saplings of canopy trees, together with smaller understory trees, shrubs, and herbs. Examples of understory plants found in Puget Sound forests include vine maple, beaked hazelnut, tall Oregon grape, salal, and sword fern.

Urban Natural Area — see Natural Area.

Woody Shrub
A woody, multistemmed plant that grows to less than 26 feet tall and is found in the forest understory. Examples found in Puget Sound forests include red flowering currant and tall Oregon grape.

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